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REV. 1

SUMMARY REPORT  
July 2021 to June 2022  
Quarterly Water Monitoring  
GUSTAVUS, ALASKA



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Submitted To: Alaska Department of Transportation & Public Facilities  
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Subject: REV. 1 SUMMARY REPORT, JULY 2021 TO JUNE 2022  
QUARTERLY WATER MONITORING, GUSTAVUS, ALASKA

Shannon & Wilson prepared this report and participated in this project as a consultant to the Alaska Department of Administration's Division of Risk Management (DRM) and Alaska Department of Transportation and Public Facilities (DOT&PF).

Shannon & Wilson's services were authorized by DRM under our letter titled *Confirmation of Authorization to Proceed with Environmental Support Services, Gustavus Airport PFAS Assessment, Gustavus, Alaska* dated August 23, 2018. Shannon & Wilson's services were authorized by DOT&PF under Professional Services Agreement Number 25-19-1-013, issued by the DOT&PF on December 19, 2018, and the following contract amendments:

- Amendment 40, NTPs P5-1-22 and P5-11-22 for quarterly monitoring well and water supply well (WSW) monitoring in fiscal year 2022 (FY22).
- Amendment 40, NTP P5-13-22 for the FY22 annual groundwater monitoring report.

This report presents a summary of Shannon & Wilson's water supply and monitoring well sampling and related services from July 2021 through July 2022.

Shannon & Wilson appreciates the opportunity to be of service to you on this project.



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## ACRONYMS

°C	degrees Celsius
AAC	Alaska Administrative Code
AFFF	aqueous film-forming foam
bgs	below ground surface
DEC	Alaska Department of Environmental Conservation
DO	dissolved oxygen
DoD	U.S. Department of Defense
DRO	diesel range organics
DOT&PF	Alaska Department of Transportation and Public Facilities
DRM	Alaska Department of Administration's Division of Risk Management
EPA	U.S. Environmental Protection Agency
Eurofins	Eurofins Environment Testing
FY	fiscal year
GAC	granular activated carbon
GST	Gustavus Airport
LDRC	Laboratory Data Review Checklist
LHA	Lifetime Health Advisory
mg/L	milligrams per liter
mV	millivolts
MW	monitoring well
ng/L	nanograms per liter
NPS	National Park Service
PAH	polycyclic aromatic hydrocarbons
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutanesulfonic acid
PFHpA	perfluoroheptanoic acid
PFHxA	perfluorohexanoic acid
PFHxS	perfluorohexanesulfonic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PFNA	perfluorononanoic acid
POET	point-of-entry treatment system
QA	quality assurance
QC	quality control
QSM	quality systems manual
RRO	residual range organics
SGS	SGS North America, Inc.
Shannon & Wilson	Shannon & Wilson, Inc.

ACRONYMS

Trizma ®	tris(hydroxymethyl)aminomethane buffer
WO	work order
WSW	water supply well
µg/L	micrograms per liter
YSI	multiprobe water quality meter



# 1 INTRODUCTION

Shannon & Wilson, Inc. (Shannon & Wilson) has prepared this report to document water supply well (WSW) and monitoring well (MW) sampling for the Department of Transportation and Public Facilities (DOT&PF) and point-of-entry treatment (POET) system testing efforts for the Department of Risk Management (DRM) near the Gustavus Airport (GST) in Gustavus, Alaska. This report covers project tasks completed from July 2021 through June 2022. This project is ongoing.

The GST is an active, Alaska Department of Environmental Conservation (DEC) listed contaminated site due to the presence of per- and polyfluoroalkyl substances (PFAS) in soil, groundwater, and surface water (File Number 1507.38.017, Hazard ID 26904).

This report was prepared for DOT&PF and DRM in accordance with the terms and conditions of Shannon & Wilson's contracts, relevant DEC guidance documents, and 18 Alaska Administrative Code (AAC) 75.335.

## 1.1 Purpose and Objectives

The purpose of the services described in this report was to evaluate the potential for human exposure to PFAS in groundwater near the GST. Shannon & Wilson's primary objectives were to collect quarterly and annual groundwater samples from WSWs meeting the monitoring criteria detailed in Section 1.5, and to collect quarterly groundwater samples from MWs in the MW network shown in Exhibit 2-2 below. Well search and sampling areas are shown in Figure 1. The fiscal year 2022 (FY22) monitoring status of WSWs is shown in Figure 2.

Our secondary objective was to collect groundwater samples from water supply wells (WSWs) within the well search areas that were not sampled during previous sampling efforts.

## 1.2 Background

The GST terminal is located at 1 Airport Way in Gustavus, Alaska (Figure 1). The property is owned by the DOT&PF, who also owns multiple adjacent parcels. The geographic coordinates of the GST terminal are latitude 58.4252, longitude -135.7074.

The DOT&PF Crash and Fire Rescue program used aqueous film-forming foam (AFFF) for training, annual fire apparatus testing, and emergency response at the GST for many years.

AFFF release areas are shown in Figure 1. The precise timeline of AFFF use at the GST is unknown, and it is possible additional areas of AFFF use have not been identified. AFFF contains PFAS, a category of persistent organic compounds. There is evidence that exposure to PFAS can lead to adverse health effects.

On May 4, 2018, DEC informed DOT&PF that the airport terminal well and National Park Service (NPS) water system well were at risk for PFAS contamination. On June 27, 2018, DOT&PF sampled both WSWs for the presence of PFAS. The analytical results were received on July 30, 2018. The airport terminal well contained levels of PFAS exceeding the 2018 DEC regulatory level, which was equivalent to the 2018 U.S. Environmental Protection Agency's (EPA's) Lifetime Health Advisory (LHA). The NPS well had detections of several PFAS less than the EPA's LHA. DOT&PF and DRM contacted Shannon & Wilson regarding the Gustavus results. Shannon & Wilson began WSW search and sampling efforts in August 2018. Results from the initial sampling event is summarized in our April 2019 report, *August 2018 to November 2018 Private Well Sampling-Revision 1*. Results from subsequent sampling events are summarized in our annual sampling reports.

Shannon & Wilson has sampled 123 WSWs for PFAS on and around the GST since 2018. Figure 1 shows the extent of the overall well search and sampling effort. PFAS have been identified in several WSWs at concentrations exceeding the applicable DEC regulatory levels. We note that DEC regulatory levels have changed over the course of this ongoing project. Well search and sampling areas were expanded until PFAS concentrations in wells along the edges of the sampling area were found to be less than the applicable DEC regulatory levels at the time.

WSW sample concentrations for the sum of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) have ranged from not detected to 6,110 nanograms per liter (ng/L) for this project. WSW depths are generally between 15 to 25 feet below ground surface (bgs) based on information provided by residents and the former, local driller who installed most of the wells. Shannon & Wilson was not able to obtain well-drilling or construction logs to confirm these depths.

During October 2019 site characterization activities, Shannon & Wilson coordinated with Discovery Drilling to install 15 MWs at and near the GST. MWs were installed as one shallow well (15 to 20 feet bgs) per location or as a two-well cluster with one shallow and one deep well (20 to 40 feet bgs). MWs installed in 2019 have been sampled quarterly since installation, except for cancelled events or sampling prevented during severe weather causing wells to be inaccessible. Mann-Kendall trend analysis performed on MW results from 2019 through June 2021 indicated increasing concentrations of one or more PFAS in four MWs.

Through coordination with the DOT&PF and DEC, Shannon & Wilson established the well monitoring network criteria defined in Section 1.5. Quarterly WSW monitoring began in March 2019. Annual monitoring began in June 2019. WSW sampling events conducted between December 2018 and November 2019 are presented in our report *Summary Report, December 2018 to November 2019 Water Supply Sampling*, dated August 2020. WSW and MW sampling events conducted between July 2020 and June 2021 are presented in our report *Summary Report, July 2020 to November 2021 Quarterly Water Sampling*, dated February 2022. Quarterly and annual sampling conducted between July 2021 and June 2022 are covered in this report.

### 1.3 Geology and Hydrology

The GST sampling area lies in a glacial outwash plain. The plain is bounded by the Chilkat Mountain Range to the northeast, Glacier Bay to the northwest and Icy Strait to the south. Fluvial deposits are found with increasing frequency near the shoreline. The high concentration of sand and gravel creates preferential pathways for groundwater flow. Due to a high rate of glacial isostatic rebound, high silt concentrations are also observed near the shoreline.

Our knowledge of subsurface geology and hydrology in the investigation area is based on observations Shannon & Wilson made during drilling activities and information provided to us by a local resident (Howell, 2019). Our 2019 and 2021 site characterization investigations noted the sampling area is mostly comprised of fluvial and marine sediments. The soil profile generally consists of water-bearing, interbedded sand and silt underlain by a silt or silty clay layer. The silt and clay layers were observed at varying depths ranging from approximately 10 to 45 feet bgs. Three of the borings installed to 50 feet bgs did not encounter silt or clay. Where clay was encountered during the 2021 event, it was described as “fat” or “wet” indicating the groundwater above and below the clay the clay are communicating. Consequently, Shannon & Wilson does not consider the observed clay layer to be a confining layer.

The depth to the water table ranges from 0.62 feet to 11.49 feet bgs. At the well cluster near the western end of Fara Way, the water table ranges from 6.33 feet bgs at the shallow well to 8.22 feet bgs at the deeper well. Saltwater was encountered in six deep wells installed during 2021 site characterization.

### 1.4 Contaminants of Concern and Action Levels

The primary contaminants of concern are PFOS and PFOA. The DEC groundwater-cleanup levels for PFOS and for PFOA are 400 ng/L. These levels were promulgated in November

2016. The applicable DEC action level for drinking water aligns with the 2021 EPA LHA of 70 ng/L for the sum of PFOS and PFOA. The LHA was published in May 2016. This threshold is the applicable action level for drinking water samples collected in FY22 in accordance with DEC's April 9, 2019, Technical Memorandum, titled *Action Levels for PFAS in Water and Guidance on Sampling Groundwater and Drinking Water*. From August 2018 to April 2019 the State of Alaska enforced a different action level for drinking water. Please refer to our *Summary Report, December 2018 to November 2019 Water-supply Well Sampling* for more details. Additional contaminants of concern include petroleum compounds for the MWs onsite at the GST and arsenic for the POET system installed at the location of PW-200. These action levels, in accordance with *DEC 18 AAC 75.345, Table C*, are shown in Exhibit 1-1 below.

#### Exhibit 1-1: Applicable Regulatory Action Levels

Media	Compound <sup>b</sup>	Level
Drinking water	PFOS + PFOA	70 ng/L
Groundwater	PFOS	400 ng/L
Groundwater	PFOA	400 ng/L
Drinking Water	Arsenic	10 µg/L
Groundwater	Diesel Range Organics	1.5 mg/L
Groundwater	Benzene	4.6 µg/L
Groundwater	Residual Range Organics	1.1 mg/L
Groundwater	2-Methylnaphthalene	36 µg/L
Groundwater	Benzo(a)anthracene	0.3 µg/L
Groundwater	Benzo(a)pyrene	0.25 µg/L
Groundwater	Benzo(b)fluoranthene	2.5 µg/L
Groundwater	Benzo(k)fluoranthene	0.8 µg/L
Groundwater	Chrysene	2.0 µg/L
Groundwater	Dibenzo(a,h)anthracene	0.25 µg/L
Groundwater	Indeno(1,2,3-cd)pyrene	0.19 µg/L

Notes:

a EPA's drinking-water maximum contaminant level.

b Petroleum compounds detected in one or more samples collected during this reporting period are presented here. Additional petroleum compounds and their associated cleanup levels are presented in Table 9.

µg/L= micrograms per liter; mg/L = milligrams per liter; ng/L = nanograms per liter; PFOA= perfluorooctanoic acid; PFOS = perfluorooctanesulfonic acid

On October 2, 2019, DEC published an updated Technical Memorandum requesting samples be submitted for additional PFAS analytes. Water samples collected during the sampling events summarized in this report were submitted for 18 PFAS analytes via EPA

Method 537.1 or 537.1M as shown in Exhibit 1-2. Beginning in April 2022, samples were submitted using the analytical method DEC approved for the laboratory. The method is compliant with EPT 537 and is referenced as the Department of Defense (DoD) Quality Systems Manual (QSM) Table B-15.

**Exhibit 1-2: Reported PFAS Analytes**

EPA 537.1 PFAS Analytes	
PFOS	perfluorotetradecanoic acid (PFTeA)
PFOA	perfluorotridecanoic acid (PFTriDA or PFTriA)
Perfluoroheptanoic acid (PFHpA)	perfluoroundecanoic acid (PFUnA)
Perfluorononanoic acid (PFNA)	hexafluoropropylene oxide dimer acid (HFPO-DA)
Perfluorohexanesulfonic acid (PFHxS)	N-ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)
perfluorobutanesulfonic acid (PFBS)	N-methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)
perfluorodecanoic acid (PFDA)	11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11CL-PF3OUdS)
perfluorododecanoic acid (PFDoA)	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CL-PF3ONS)
perfluorohexanoic acid (PFHxA)	4,8-dioxa-3H-perfluorononanoic acid (DONA or ADONA)

1.5 Scope of Services

Our scope summarized in this report includes four WSW and MW sampling events, one first-time sample, and quarterly sampling and maintenance of the [REDACTED] point-of-entry-treatment (POET) system (PW-200). Our procedures are outlined in our *DOT&PF Statewide PFAS Addendum 002-GST-00 Gustavus Well Monitoring* (work plan).

The annual WSW and MW events occurred in August 2021. The quarterly sampling events occurred in October 2021, February 2022, and April 2022. One first-time WSW sample was also collected in August 2021.

Quarterly, Shannon & Wilson attempted to sample WSWs within the search areas that were not sampled during a previous sampling event, or that met one or more of the following criteria, per DEC guidance:

- WSWs where the maximum combined PFOS and PFOA concentration was detected between 35 ng/L and 69 ng/L in a historical sample (50 and 100 percent of the LHA); or
- WSWs within 500 lateral feet of a WSW or MW with concentrations greater than the applicable regulatory limits or meeting the quarterly sampling criteria.

Annually, Shannon & Wilson attempted to sample WSWs that met one or more of the following criteria, per DEC guidance:

- WSWs where the maximum combined PFOS and PFOA concentration was detected between 17.5 ng/L and 35 ng/L in a historical sample (25 and 50 percent of the LHA); or
- WSWs within 500 lateral feet of a water-supply or MW with concentrations meeting the quarterly sampling criteria.

Lateral distance is measured from the parcel location global positioning system point; these points were collected during the initial well search. These points are generally located at the structure served by the well and may not reflect the WSW's location.

Per DEC guidance, locations that are considered "affected" (one or more historical concentration exceeds the applicable DEC action limit) are not included in WSW monitoring events.

This report was prepared for the exclusive use of the DOT&PF and its representatives. This work presents Shannon & Wilson's professional judgment as to the conditions of the site. Information presented here is based on the sampling and analyses field staff performed. This report should not be used for other purposes without Shannon & Wilson's approval or if any of the following occurs:

- Project details change, or new information becomes available, such as revised regulatory levels or the discovery of additional source areas.
- Conditions change due to natural forces or human activity at, under, or adjacent to the project site.
- Assumptions stated in this report have changed.
- If the site ownership or land use has changed.
- Regulations, laws, or cleanup levels change.
- If the site's regulatory status has changed.

If any of these occur, Shannon & Wilson should be retained to review the applicability of recommendations. This report should not be used for other purposes without Shannon & Wilson's review. If a service is not specifically indicated in this report, do not assume it was performed.

## 2 FIELD ACTIVITIES

This section summarizes field activities performed from July 2021 through June 2022. Travel was conducted in accordance with state guidelines, City of Gustavus policies, and Shannon & Wilson's Site-Specific Health and Safety Plan, including the addition of COVID-19 protocols for sampling at private residences.

Shannon & Wilson personnel who collected analytical water samples for this project are State of Alaska Qualified Environmental Professionals as defined in 18 AAC 75.333[b]. Copies of our *Water Supply Well Sampling Logs*, and *Monitoring Well Sampling Logs* for the reporting period are included in Appendix A.

Water samples collected during the sampling events summarized in this report were submitted via EPA Method 537.1 or 537.1M for 18 PFAS analytes shown in Exhibit 1-2. Beginning in April 2022, samples were submitted using the EPA 537 compliant method approved by DEC for the laboratory; this method is referenced as DoD QSM Table B-15.

Per DEC guidance, groundwater samples were also collected for petroleum compounds during each quarterly sampling event for MW-11-15 and MW-12-10. MW Sampling Logs are included in Appendix A. We note the analysis of petroleum compounds has been removed following approval of the FY21 report; however, those approvals were received prior to the FY22 samples being collected.

Field staff are aware of the potential for cross-contamination from numerous everyday household items. Precautions to prevent cross contamination included discontinuing the use of personal protective equipment and field supplies known to contain PFAS, using liner bags to contain samples before and after sample collection, hand washing, and donning a fresh pair of disposable nitrile gloves before sample collection.

## 2.1 Water Supply Well Sampling

Shannon & Wilson collected 62 primary samples and 13 field duplicates from WSWs during FY22. Samples collected from the [REDACTED] POET are not included in these totals. [REDACTED] POET sampling is described in Section 2.2.

Shannon & Wilson purged WSW systems prior to sampling by running water until water-quality parameters stabilized. YSI multiprobe water quality meter (YSI) readings of the following parameters were recorded: temperature in degrees Celsius ( $^{\circ}\text{C}$ ), pH, and conductivity in microSiemens. The following values over three consecutive readings were used to indicate stability:  $\pm 0.1$  pH,  $\pm 0.5$   $^{\circ}\text{C}$ , and  $\pm 3$  percent conductivity. Purge water was discharged to an



**Exhibit 2-1: Cistern shelter during construction. Alternative water source provided by DRM for impacted property.**

indoor sink or the ground surface. Indoor plumbing in the GST well search area discharges to private septic systems.

Following parameter stabilization, field staff collected PFAS groundwater samples from sampling locations upstream of water treatment systems or water softeners. For the purposes of this project, we do not consider small (i.e., less than 18 inches in height) particulate filters to be treatment systems. WSW samples were preserved with tris(hydroxymethyl)aminomethane buffer (Trizma®), per the laboratory standard operating procedure for drinking-water samples. In April 2022, following guidance from the DEC and the laboratory, we discontinued use of Trizma®. Copies of the *Water Supply Well Sampling Logs* are included in Appendix A.

Locations where results were reported with PFOS and PFOA detected at 70 ng/L or greater are receiving bottled water until a long-term alternative water solution is in place.

### 2.1.1 Quarterly and Annual Monitoring

Quarterly and annual WSW sampling criteria is described in Section 1.5. The FY22 WSW monitoring network included 14 quarterly and 14 annual locations. Monitoring status is shown in Figure 2. One annual location (NPS Well) was placed on a quarterly monitoring schedule after a nearby MW sample collected in October 2021 met criteria, making the network 15 quarterly and 13 annual locations for subsequent events.

In August 2021, Shannon & Wilson field staff collected samples from one first-time location, 14 quarterly monitoring locations and nine (of 14) annual monitoring locations. In October 2021, staff collected samples from 12 (of 14) quarterly monitoring locations and one annual location that was not accessible in August 2021. In February 2022, staff collected samples from 12 (of 15) quarterly monitoring locations. During the April 2022 event, Shannon & Wilson sampled 13 (of 15) quarterly monitoring locations. Where a quarterly and/or annual sample was not collected it was due to logistical reasons with the property owner.

These sampling events are summarized in Exhibit 2-1 below. Homes and businesses marked "No" indicate the owner or occupant declined sampling, Shannon & Wilson was unable to reach the property contact, or property could not be reached due to heavy snow. Property owners more commonly declined sampling in the winter and spring sampling events when properties are winterized.



**Exhibit 2-2: Quarterly and Annual Location Summary**

Sample Name	Description	Summer 2021	Fall 2021	Winter 2022	Spring 2022
NPS Well / PW-1001		Yes	-	Yes ¥	Yes
PW-010		Yes	Yes	Yes	Yes
PW-012		Yes	Yes	Yes	Yes
PW-032*		Yes	-	-	-
PW-037		Yes	Yes	Yes	Yes
PW-038		Yes	Yes	Yes	Yes
PW-039		Yes	Yes	Yes	Yes
PW-040		Yes	Yes	Yes	Yes
PW-047*		No	-	-	-
PW-059		Yes	Yes	No	Yes
PW-061*		Yes	-	-	-
PW-074*		No	-	-	-
PW-203		Yes	Yes	Yes	Yes
PW-204.1		Yes	No	No	No
PW-205.1		Yes	Yes	Yes	Yes
PW-207*		Yes	-	-	-
PW-211		Yes	Yes	Yes	Yes
PW-212*		Yes	-	-	-
PW-218*		No	-	-	-
PW-219*		Yes	-	-	-
PW-221		Yes	Yes	Yes	Yes
PW-230*		Yes	-	-	-
PW-240*		Yes	-	-	-
PW-241*		No	-	-	-
PW-401		Yes	Yes	Yes	Yes
PW-414*		No	Yes	-	-
PW-419		Yes	No	No	No
PW-438*		Yes	-	-	-
PW-467‡		Yes†	-	-	-

Notes:

\*=annual sample; \*\*=removed from network due to well category; †=exceeded regulatory levels, removed from monitoring network; ‡=first-time sample; ¥=added to quarterly monitoring.

2.1.2 First-Time Samples

Shannon & Wilson field staff attempted to contact owners of properties that have not been sampled due to owners’ extended absences. Locations where more than five attempts have been made to contact owners are no longer being visited. We consider these locations to be

passive refusals. If field staff note changes in property use, we will make additional attempts to contact the property owners and/or residents.

In August 2021, Shannon & Wilson collected a sample from the well on a property being developed on White Drive (PW-467).

### 2.1.3 Notification of Results

Shannon & Wilson notified property owners and occupants following the receipt of analytical data. Owners and/or occupants were first contacted by telephone. We prepared letters that interpret the results of the relevant WSW sample(s). Letters were mailed or email per the request of the recipient.

Letters were tailored to each property and analytical sample and included the following information:

- sample name(s);
- comparison of PFOS and PFOA analytical results to the applicable action level;
- description of the project;
- pages of the laboratory report that apply to the water-well sample; and
- updated GST PFAS fact sheet.

A copy of the result letter template is included in Appendix B.

### 2.1.4 Public Information

The DOT&PF and DEC also host webpages describing the PFAS water-testing project. These webpages include a project summary, list of contacts, results map, and links to additional resources.

## 2.2 Point-of-Entry Treatment System Monitoring

Shannon & Wilson collected samples from the POET system installed at the [REDACTED] under contract to DRM. The POET system is designed to remove PFAS and arsenic from the water supply prior to use at the property. Water samples were collected following parameter stabilization as described in section 2.2. Quarterly samples were collected during the reporting period from the following locations in the treatment system:



**Exhibit 2-3: Portion of the [REDACTED] POET system. Sampling ports are shown in the upper left.**

- *PW-200-Sink*: collected from a post-treatment sink or spigot, generally collected from the sink in the garage. This sample is submitted for PFAS and arsenic analysis.
- *PW-200-C Port Composite*: collected from the mid-system C-port of each of the four parallel treatment units. This composite sample is submitted for PFAS analysis.
- *PW-200-Unit #-C-port*: collected from the mid-system C-port of each of the four parallel treatment units. These four samples are analyzed for PFAS analysis if PFAS is detected in the composite sample

listed above. These samples were not analyzed during this reporting period.

- *PW-200-F-port*: collected from the F-port located immediately after the treatment system, prior to entering indoor plumbing. This sample is analyzed for PFAS and arsenic if results from the other ports indicate PFAS and/or arsenic in the treated water. An F-port sample was not analyzed during this reporting period.
- *PW-200*: collected from the raw-water spigot, the A-port or the pressure tank spigot. This sample is submitted for PFAS and arsenic analysis.

## 2.3 Monitoring Well Sampling

Shannon & Wilson generally collected 15 primary groundwater and two or three field duplicates each quarter from the MW network (MW-1 through MW-12 installed in October 2019). However, in February 2022, heavy snow, rain, ice, and water in the monuments prevented sample collection from the following MWs: MW-3-15, MW-4-20, MW-7-20, and MW-12-10. Exhibit 2-4 shows MW-12-10 surrounded by snow and under melt-water.

Prior to sample collection, field staff purged MWs using a peri-pump or submersible pump and new, disposable PFAS-free tubing. YSI readings were recorded for the following parameters: temperature in °C, pH, conductivity in microSiemens, dissolved




**Exhibit 2-4: Water in MW-12-10 monument, overtopping the casing.**

oxygen (DO) in milligrams per liter, and redox potential in millivolts (mV). Parameters were recorded approximately once every three minutes until sample collection. The following values were used to indicate stability for a minimum of three consecutive readings:  $\pm 0.1$  pH,  $\pm 3$  percent  $^{\circ}\text{C}$ ,  $\pm 10$  percent DO,  $\pm 3$  percent conductivity, and  $\pm 10$  mV redox. Samples were collected into laboratory-supplied bottles following parameter stabilization, or after three well volumes were purged.

Shannon & Wilson discharged purge water to five-gallon buckets and treated purge water with granular activated carbon (GAC) before discharging to the ground surface. A post-treatment GAC sample was collected at the end of each sampling event to monitor for PFAS break-through.

MW descriptions are presented in Exhibit 2-5, below.

**Exhibit 2-5: FY22 Quarterly Monitoring Well Network Summary**

Monitoring Well	Location Description
MW-1-15	
MW-1-40	
MW-2-20	
MW-2-30	
MW-3-15	
MW-3-40	
MW-4-20	
MW-5-20	
MW-6-20	
MW-7-20	
MW-8-20	
MW-9-30	
MW-10-20	
MW-11-15	
MW-12-10	

## 2.4 Sample Custody, Storage, and Transport

Immediately after collection, the PFAS sample bottles for each location were placed in Ziploc bags and stored in a designated sample cooler or refrigerator maintained between

0 °C and 6 °C with ice substitute separated from the sample bottles by a liner bag. Samples submitted for additional analyses were also stored in the temperature-controlled cooler; however, the requirement to bag the samples and ice separately is not needed.

Shannon & Wilson maintained custody of the samples until submitting them to the laboratories for analysis. Analytical samples and chain-of-custody forms were packaged in a hard-plastic cooler with an adequate quantity of frozen-ice substitute and packing materials to prevent bottle breakage during shipments. Staff applied custody seals to the cooler, which were observed to be intact upon receipt by the laboratory.

Shannon & Wilson shipped the sample coolers to Eurofins Environment Testing in West Sacramento, California (Eurofins) for analysis of 18 PFAS using Alaska Air Cargo's priority overnight service known as Goldstreak. Shannon & Wilson shipped or hand-delivered sample coolers to SGS North America, Inc. (SGS) in Alaska for analysis of petroleum and arsenic analytes.

## 2.5 Deviations

In general, Shannon & Wilson conducted services in accordance with the approved proposals and work plan addendum. The following are deviations from the proposed scope of services described in Section 1.5.

- Sample *PW-012* was collected from a location downstream of the property's water softener or other in-home treatment system during one or more sampling events. In April 2022 and subsequent events, the owner indicated the softener was no longer functioning.
- In August 2021, sample *PW-205.1* was sampled through a PVC pipe attached to a residential well pump. The pump was not yet connected to indoor plumbing but was installed in the crawlspace under the cabin. Owner would not permit sampling directly from the pump under the cabin.
- Samples collected in August 2021 may not show accurate pH due to YSI malfunction. The sampler used pH paper to record approximate pH for some locations.
- Sample *PW-467* was collected in August 2021 using a residential well pump intended to be used with indoor plumbing. The WSW was not connected to a structure at the time.
- In August 2021, MW samples *MW-8-20* and *MW-7-20* were collected before stabilization of parameters.
- Due to malfunction of the submersible pump, sample *MW-11-15* was collected using a peri-pump in October 2021. Purging was completed prior to pump malfunction.

- The following quarterly MWs could not be sampled in February 2022: MW-3-15, MW-4-20, MW-7-20, and MW-12-10.

## 3 ANALYTICAL RESULTS

Shannon & Wilson submitted groundwater samples to Eurofins for analysis of 18 PFAS compounds using method 537.1, 537M, or DoD QSM Table B-15. Analytical lab reports and associated Laboratory Data Review Checklists (LDRCs) are included in Appendix C. PFAS analytes are listed in Exhibit 1-2 above. Results of WSW and MW samples were compared to the applicable action level.

We submitted onsite MW water samples (*MW-11-15* and *MW-12-10*) to SGS in Anchorage, Alaska for analysis of benzene, toluene, ethylbenzene, and xylenes analysis by EPA Method 8021, gasoline range organics by AK Method 101, diesel range organics (DRO) by AK Method 102, residual range organics (RRO) by AK Method 103, and polycyclic aromatic hydrocarbons (PAH) by EPA Method 8270D-SIM.

POET quarterly monitoring samples were also submitted to SGS for the analysis of arsenic by EPA 200.8.

The Eurofins and SGS laboratory reports, associated LDRCs and a summary of our Quality Assurance/Quality Control (QA/QC) assessment are included in Appendix C. Results of the quarterly WSW sampling are presented in Tables 1 through 4, and results of the quarterly MW sampling are presented in Tables 5 through 8. Results of petroleum analyses from onsite MWs are shown on Table 9. PFAS and arsenic results from samples collected from the [REDACTED] POET system are shown on Table 10.

### 3.1 Water Supply Wells

The following sections summarize the WSW results associated with each FY22 sampling event. PFAS results for WSW samples collected between August 2021 and April 2022 are presented in Tables 1 through 4. The highest sum of PFOS and PFOA results of WSW samples collected in this reporting period are shown on Figure 3. Figures D.1 through D.37 (Appendix D) are graphic representations of historical results for water-supply locations where at least three samples were collected.

#### 3.1.1 Summer 2021

Table 1 summarizes the PFAS results of August 2021 quarterly and annual WSW samples, and one first-time sample (Eurofins work order [WO] 320-78307-1). The samples collected

from quarterly or annual locations did not report PFOS and PFOA concentrations greater than the applicable action level. The highest result for the sum of PFOS and PFOA was 47 ng/L, detected in sample *PW-204.1*. PFOS was detected at 44 ng/L and PFOA was detected at 2.5 ng/L.

Analytical results for first-time sample *PW-467* exhibited combined PFOS and PFOA concentrations greater than the action level, reported at 72 ng/L.

Perfluorohexanesulfonic acid (PFHxS), perfluorohexanoic acid (PFHxA), perfluorobutanesulfonic acid (PFBS), and perfluoroheptanoic acid (PFHpA) were also detected above the reporting limit in one or more project samples collected in August 2021.

### 3.1.2 Fall 2021

Table 2 summarizes PFAS results of the October 2021 quarterly samples, and one annual sample (Eurofins WOs 320-81057-1 and 320-81261-1). The samples collected had reported PFOS and PFOA concentrations less than the applicable action level. The highest PFOS result was 17 ng/L detected in sample *PW-401*. PFOA was not detected in this sample. The highest PFOA result was 5.3 ng/L detected in *PW-059*, PFOS was detected less than the reporting limit in this sample.

PFHxS, and PFHxA were also detected above the reporting limit in one or more project samples collected in October 2021.

### 3.1.3 Winter 2022

Table 3 summarizes PFAS results for February 2022 quarterly WSW samples (Eurofins WO 320-84759-1). The samples collected had reported PFOS and PFOA concentrations less than the applicable action level. The highest result for the sum of PFOS and PFOA was 17 ng/L, detected in sample *PW-401*. PFOS was detected at 17 ng/L; PFOA was not detected.

PFHxS and PFHxA were also detected above the reporting limit in one or more project samples collected in February 2022.

### 3.1.4 Spring 2022

Table 4 summarizes PFAS results of April 2022 quarterly WSW samples (Eurofins WO 320-87434-1). The samples collected had reported PFOS and PFOA concentrations less than the applicable action level. The highest result for PFOS was detected at 18 ng/L detected in sample *PW-401*. PFOA was not detected in this sample. The highest PFOA result was detected at 3.8 ng/L in sample *NPS Well*, where PFOS was detected at 9.4 ng/L. PFHxS,

PFHxA, and PFHpA were also detected above the reporting limit in one or more project samples collected in April 2022.

### 3.1.5 Historical Results

Historical PFAS results for quarterly WSW samples collected between August 2018 and June 2021 are presented in Table 11.

PFAS results for WSW locations where at least three samples have been collected are plotted in Figures D.1 through D.37 (Appendix D).

## 3.2 POET System Monitoring

Table 10 summarize concentrations of PFAS and arsenic analytes in samples associated with the POET system installed at the Gustavus Inn (PW-200).

Analytical results for samples collected from untreated groundwater had reported concentrations of PFOS and PFOA less than the applicable action level for samples collected from August 2021 through April 2022.

Analytical arsenic results exceeded regulatory limits in the untreated groundwater samples for each sampling event.

PFAS analytes were not detected in the treated water (sink), or C-port composite samples during the sampling events covered in this report.

## 3.3 Monitoring Wells

The following sections summarize the MW results associated with each MW sampling event. PFAS results for MW samples collected between August 2021 and April 2022 are presented in Tables 5 through 8. The highest sum of PFOS and PFOA results for MW samples collected in this reporting period are shown on Figure 4. Figures D.38 through D.53 (Appendix D) are graphic representations of historical results for MW locations.

### 3.3.1 Summer 2021

Table 5 summarizes PFAS results of August 2021 quarterly MW samples (Eurofins WO 320-78303-1). Analytical results for the following MW samples exhibited PFAS results greater than the applicable action level: *MW-2-20*, *MW-10-20*, and *MW-12-10*. Analytical results for *MW-11-15* indicated combined PFOS and PFOA concentrations of 64 ng/L.



The sum of PFOS and PFOA was 556 ng/L in sample MW-2-20. This well exhibited the highest PFAS concentrations for this sampling event.

### 3.3.2 Fall 2021

Table 6 summarizes PFAS results of October 2021 quarterly MW samples (Eurofins WO 320-81056-1). Analytical results for the following MW samples exhibited PFAS results greater than the applicable action level: MW-2-20, MW-10-20, and MW-11-15.

The sum of PFOS and PFOA was 830 ng/L in sample MW-11-15. This well exhibited the highest PFAS concentrations for this sampling event.

### 3.3.3 Winter 2022

Table 7 summarizes PFAS results of February 2022 quarterly MW samples (Eurofins WO 320-84757-1). Analytical results for the following MW samples exhibited PFAS results above the applicable action level: MW-2-20 and MW-11-15.

The sum of PFOS and PFOA was 290 ng/L in sample MW-2-20. This well exhibited the highest PFAS concentrations for this sampling event. Note that multiple MWs could not be sampled at this event due to extreme weather conditions.

### 3.3.4 Spring 2022

Table 8 summarizes PFAS results of April 2022 quarterly MW samples (Eurofins WO 320-87432-1). Analytical results for the following MW samples exhibited PFAS results above the applicable action level: MW-2-20 and MW-11-15. Analytical results for MW-9-30 indicated a combined PFOS and PFOA concentration of 68 ng/L and MW-10-20 indicated 63 ng/L.

The sum of PFOS and PFOA was 409 ng/L in sample MW-2-20. This well exhibited the highest PFAS concentrations for this sampling event.

### 3.3.5 Petroleum Analysis

Table 9 summarizes results of petroleum analyses of August 2021 through April 2022 MW samples. Results were less than DEC cleanup levels for the target analytes.

Samples collected from MW-11-15 indicated detections of DRO and RRO in August 2021, October 2021, and April 2022; 2-methylnaphthalene and benzene in October 2021; and multiple PAH analytes in February 2022. In general, the petroleum concentrations were reported as estimated below the reporting limit.

### 3.3.6 Historical Results

Historical PFAS results for quarterly MW samples collected between August 2018 and June 2021 are presented in Table 12.

PFAS results for MW samples are plotted in Figures D.38 through D.53 (Appendix D).

## 4 DISCUSSION AND RECOMMENDATIONS

The following sections provide a detailed discussion of the results of quarterly WSW, MW, and POET system testing performed August 2021 through April 2022 (FY22). Observations and recommendations are based on available data and may be revised following future sampling events. We note that conclusions derived from small data sets may be prone to errors and inconsistencies.

### 4.1 Comparison to Regulatory Levels

Historical WSW PFAS results for samples collected in August 2018 through April 2022 are presented in Table 11. Historical MW PFAS results for samples collected in August 2018 through April 2022 are presented in Table 12.

#### 4.1.1 Water Supply Wells

PFOS was frequently the highest detected PFAS analyte in the quarterly WSW samples collected during the events covered in this report.

Between August 2021 and April 2022, one first-time WSW sample (PW-467) reported PFOS and PFOA concentrations above the applicable action level (Table 1). This well was drilled in August 2021 as a water source for a new residential development. The property has been provided alternative water.

The highest PFAS concentrations were detected in WSWs near properties where PFAS were detected above the action limit in a previous sample. Overall, results of samples collected during FY22 were similar to samples results from the previous year. Results of trends analysis are discussed in Section 4.2. PW-059 exhibited detection of PFOA greater than the reporting limit for the first time in October 2021. PW-204.1 replaced PW-204 in late 2020, due to “low production” according to the owner. PW-204.1 exhibits higher concentrations of detected PFAS than PW-204, despite being less than 100 feet from the previous location. PW-204 was reported to be approximately 20 feet deep, PW-204.1 was installed at 34 feet bgs.

#### 4.1.2 Monitoring Wells

PFOS was frequently the highest detected PFAS analyte in the quarterly MW samples collected during the events covered in this report.

Between August 2021 and April 2022, ten samples collected from four groundwater MWs had PFOS and PFOA concentrations above the applicable action level. Two samples collected from MW-2-20 exceeded the DEC groundwater cleanup level of 400 ng/L. In August 2021, PFOS was detected at 520 ng/L in MW-11-15 (Table 5), and in October 2021 PFOS was detected at a concentration of 820 ng/L (Table 6).

We note that concentrations reported in MW-2-20 are likely the results of a surface spill near the well and is not associated with the PFAS contamination originating from the airport. Evidence for this finding can be seen in MW-2-30 which is approximately 10 feet deeper than MW-2-20 where PFAS is either not detected or is detected at low levels. Additionally, concentrations reported in MW-2-20 are routinely greater than concentrations reported in wells associated with the airport plume, with a notable higher level of PFOA in this well than other wells associated with the airport. We understand DEC is investigating this area separately to determine the source.

Generally, results from this reporting period were similar to the previous year. Results of trends analysis are discussed in Section 4.2.

### 4.2 Trend Analysis

Shannon & Wilson performed a statistical analysis on the PFAS data set to provide information regarding the potential future risk to receptors via drinking water exposure. We assessed temporal data for quarterly and annual WSW and MWs using a Mann-Kendall nonparametric trend analysis. Mann-Kendall analyzes for increasing or decreasing trends with a confidence above 95 percent.

We are unable to report a trend for locations where fewer than four sample results are available. Trends were analyzed for C4 PFBS, C5 PFHpA, C6 PFHxS, C6 PFHxA, C8 PFOS, C8 PFOA, and PFOS and PFOA combined. We note these trends were calculated using between four and thirteen sampling events and are subject to change as more data are accumulated.

Professional judgement was used to interpret trends derived from data that included a mixture of non-detected results and estimated detections below the laboratory reporting limit. Our statistical analysis referenced the laboratory reporting limit for non-detected results. Trends were not derived from data sets with a mixture of detected and non-detected

results where 50 percent or more of the data set was not detected. Trends are reported as stable for analytes with consistent non-detected PFAS results for the reported location.

#### 4.2.1 Water Supply Wells

Table 13 summarizes the statistical trend analysis data for the quarterly and annual WSW locations. Locations in the quarterly WSW monitoring network did not exhibit statistically significant “increasing” trends for PFAS. However, we note WSWs in exceedance of applicable action levels were removed from the monitoring network and therefore we lack sufficient monitoring data to complete statistical trend analysis for those wells. Monitoring of the [REDACTED] POET (an affected property) provided sufficient data to perform trends analysis.

##### 4.2.1.1 PFOS Trend Analysis

Sample results for locations NPS Well, PW-012, PW-401, and PW-200 exhibited a “decreasing” trend in PFOS concentrations. Concentrations of PFOS from PW-221 exhibited a “possibly decreasing” trend. PFOS results for locations PW-205.1, and PW-419 exhibited a “stable” trend with no significant change.

A trend was unable to be calculated or “no trend” was reported for the remaining quarterly and annual WSWs.

##### 4.2.1.2 PFOA Trend Analysis

Sample results for PW-200 exhibited a “decreasing” trend in PFOA concentrations. Concentrations of PFOA from the NPS Well exhibited a “possibly decreasing” trend.

A trend was unable to be calculated for the remaining quarterly and annual WSWs.

##### 4.2.1.3 PFOS and PFOA Combined Trend Analysis

Trends for combined PFOS and PFOA concentrations were analyzed for WSW locations with calculable PFOS and PFOA combined values. Locations with no detections of PFOS or PFOA were not analyzed.

WSW locations NPS Well and PW-200 exhibited statistically significant evidence of a “decreasing” trend.

A trend was unable to be calculated for the remaining quarterly and annual WSWs.

#### 4.2.2 Monitoring Wells

Table 14 summarizes the statistical analysis for the MW network. Most locations included data from nine sampling events, however, we note that some locations could not be sampled in one or more sampling events due to rain, snow, or other circumstances. We also note that monitoring has not been completed for enough consecutive years to perform trend analysis for various seasons.

#### 4.2.2.1 PFOS Trend Analysis

MW-5-20 and MW-7-20 exhibited statistically significant “increasing” trends for PFOS for samples collected through June 2022. MW-2-20 exhibited a “probably increasing” trend. The PFOS trend associated with MW-10-20 is reported as “stable” with no significant changes. MW-3-15 and MW-12-10 exhibited a statistically significant “decreasing” trend.

A trend was unable to be calculated or “no trend” was reported for the remaining MWs.

#### 4.2.2.2 PFOA Trend Analysis

MW-11-15 exhibited a “probably increasing” trend for PFOA for samples collected through June 2022. The PFOA trend associated with MW-5-20, MW-7-20, MW-9-30, and MW-10-20 is reported as “stable” with no significant changes. PFOA concentrations for MW-3-40 and MW-12-10 exhibited statistically significant “decreasing” trends.

A trend was unable to be calculated or “no trend” was reported for the remaining MWs.

#### 4.2.2.3 PFOS and PFOA Combined Trend Analysis

Trends for combined PFOS and PFOA concentrations were analyzed for MW locations with calculable combined values. Locations with no detections of PFOS and PFOA were not analyzed.

MW-7-20 exhibited statistically significant evidence of an “increasing” trend for PFOS and PFOA combined, and MW-2-20 exhibited a “probably increasing” trend. MW-3-15, and MW-12-10 exhibited statistically significant evidence of a “decreasing” trend. MW-9-30 exhibited a “probably decreasing” trend”.

### 4.3 Conceptual Site Model

Based on the results presented in this report, the conceptual site model for the site remains unchanged from when it was reported in *Revision 2 – Summary Report, Gustavus Airport 2021 PFAS Site Characterization*, dated May 2022. Copies of the forms are provided in Appendix E.

## 4.4 Recommendations

Based on the WSW search and sampling efforts and MW sampling completed between August 2021 and April 2022, Shannon & Wilson recommends the DOT&PF:

- continue quarterly and annual monitoring of MW and WSW locations, as approved via email by DEC in November 2022;
- conduct the annual WSW sampling event in July due to scheduling considerations;
- continue to work with the DEC and Alaska Department of Health and Social Services to educate the public regarding the potential health effects of exposure to PFAS-containing water;
- refrain from discharging PFAS-containing AFFF to the ground, surface water bodies, or groundwater during ARFF training and equipment testing; and
- continue to work closely with the DEC to determine the changes required for the WSW monitoring network based on the regulation changes that are anticipated; and
- conducting remedial efforts to remove groundwater contamination where results exceed the cleanup levels.

The information included in this report is based on limited sampling and should be considered representative of the times and locations at which the sampling occurred. Regulatory agencies may reach different conclusions than Shannon & Wilson. "Important Information about your Geotechnical/Environmental Report" has been prepared and is included, to assist you and others in understanding the use and limitations of this report.

## 5 REFERENCES

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Water Supply Well Analytical PFAS Results

	Sample Name		PW-010	PW-012		PW-032	PW-037	PW-038	PW-039	PW-040
	Regulatory Level	Units	8/24/2021	8/26/2021 DUP	8/26/2021	8/24/2021	8/23/2021	8/23/2021	8/23/2021	8/23/2021
...)	-	ng/L	<1.9	1.9	2.3	<1.9	<2.0	<1.9	<1.9	<1.9
	-	ng/L	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9
	-	ng/L	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9
	-	ng/L	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9
	2,000‡	ng/L	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9
	-	ng/L	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9
	-	ng/L	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9
	-	ng/L	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9
	-	ng/L	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9
	-	ng/L	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9
...acetic acid (N-MeFOSAA)	-	ng/L	<4.7	<4.7	<4.7	<4.7	<4.9	<4.8	<4.7	<4.7
...acetic acid (N-EtFOSAA)	-	ng/L	<4.7	<4.7	<4.7	<4.7	<4.9	<4.8	<4.7	<4.7
...e-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9
...e-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9
... (DONA)	-	ng/L	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9
...d (HFPO-DA)	10‡	ng/L	<3.7	<3.8	<3.8	<3.8	<3.9	<3.9	<3.7	<3.8
	70†	ng/L	<1.9	4.2	4.3	<1.9	<2.0	<1.9	<1.9	<1.9
		ng/L	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9

...n TestAmerica Work Order320-78307-1

...valent to parts per trillion

...Agency

...h level is 70 ng/L for PFOS and PFOA combined.

...ed as less than the reporting limit (RL) unless otherwise flagged due to quality-

...level.

...detected greater than the method detection limit (MDL) and less than the RL.

...atory.

...due to a laboratory QC failure. Flag applied by Shannon & Wilson, Inc. (\*)

...ted, biased high, due to a QC failure. Flag applied by Shannon & Wilson, Inc. (\*)

...limit exists for the associated analyte.



Water Supply Well Analytical PFAS Results

	Sample Name		PW-1001 (NPS Well)		PW-203	PW-204.1		PW-205.1	PW-207	PW-211
	Regulatory Level	Units	8/25/2021 DUP	8/25/2021	8/26/2021	8/24/2021 DUP	8/24/2021	8/24/2021	8/24/2021	8/23/2021
...)	-	ng/L	7.7	8.2	0.80 J	25	25	1.0 J	0.95 J	0.83 J
	-	ng/L	4.0	3.7	<1.9	7.2	8.0	<1.9	<1.9	<1.9
	-	ng/L	2.1	2.1	<1.9	3.1	2.7	<1.9	<1.9	<1.9
	-	ng/L	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
	2,000‡	ng/L	1.2 J	1.2 J	<1.9	2.8	2.2	<1.9	0.66 J	0.45 J
	-	ng/L	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
	-	ng/L	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
	-	ng/L	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
	-	ng/L	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
	-	ng/L	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
...acetic acid (N-MeFOSAA)	-	ng/L	<4.6	<4.9	<4.7	<4.8	<4.8	<4.7	<4.6	<4.8
...acetic acid (N-EtFOSAA)	-	ng/L	<4.6	<4.9	<4.7	<4.8	<4.8	<4.7	<4.6	<4.8
...e-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
...e-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
... (DONA)	-	ng/L	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
...d (HFPO-DA)	10‡	ng/L	<3.7	<3.9	<3.8	<3.9	<3.9	<3.7	<3.7	<3.8
	70†	ng/L	7.8	8.1	<1.9	39	44	<1.9	<1.9	<1.9
		ng/L	3.7	3.3	<1.9	2.5	2.4	<1.9	0.89 J	<1.9

...n TestAmerica Work Order 320-78307-1

...valent to parts per trillion

...Agency

...h level is 70 ng/L for PFOS and PFOA combined.

...ed as less than the reporting limit (RL) unless otherwise flagged due to quality-

...level.

...detected greater than the method detection limit (MDL) and less than the RL.

...atory.

...due to a laboratory QC failure. Flag applied by Shannon & Wilson, Inc. (\*)

...ted, biased high, due to a QC failure. Flag applied by Shannon & Wilson, Inc. (\*)

...limit exists for the associated analyte.

# Water Supply Well Analytical PFAS Results

	Sample Name		PW-221	PW-230	PW-240	PW-401		PW-419	PW-438	PW-467
	Regulatory Level	Units	8/24/2021	8/26/2021	8/24/2021	8/23/2021 DUP	8/23/2021	8/25/2021	8/23/2021	8/25/2021
3)	-	ng/L	<1.8	1.8 J	1.7 J	4.2 J*	3.1 J*	<18	2.4	27
	-	ng/L	<1.8	<1.9	<2.0	1.5 J	1.5 J	<18	<1.9	9.3
	-	ng/L	<1.8	<1.9	<2.0	0.65 J	<1.9	<18	<1.9	3.5
	-	ng/L	<1.8	<1.9	<2.0	<1.9	<1.9	<18	<1.9	<1.9
	2,000‡	ng/L	<1.8	<1.9	<2.0	0.42 J	<1.9	<18	1.0 J	2.9
	-	ng/L	<1.8	<1.9	<2.0	<1.9	<1.9	<18	<1.9	<1.9
	-	ng/L	<1.8	<1.9	<2.0	<1.9	<1.9	<18	<1.9	<1.9
	-	ng/L	<1.8	<1.9	<2.0	<1.9	<1.9	<18	<1.9	<1.9
	-	ng/L	<1.8	<1.9	<2.0	<1.9	<1.9	<18	<1.9	<1.9
	-	ng/L	<1.8	<1.9	<2.0	<1.9	<1.9	<18	<1.9	<1.9
acetic acid (N-MeFOSAA)	-	ng/L	<4.6	<4.8	<5.0	<4.8	<4.8	<46	<4.8	<4.7
acetic acid (N-EtFOSAA)	-	ng/L	<4.6	<4.8	<5.0	<4.8	<4.8	<46	<4.8	<4.7
e-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<1.8	<1.9	<2.0	<1.9	<1.9	<18	<1.9	<1.9
e-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<1.8	<1.9	<2.0	<1.9	<1.9	<18	<1.9	<1.9
(DONA)	-	ng/L	<1.8	<1.9	<2.0	<1.9	<1.9	<18	<1.9	<1.9
d (HFPO-DA)	10‡	ng/L	<3.7	<3.8	<4.0	<3.8	<3.8	<37	<3.9	<3.8
	70†	ng/L	1.0 J	2.0	<2.0	16 J*	22 J*	<18	3.8	69
		ng/L	<1.8	1.1 J	<2.0	<1.9	<1.9	<18	<1.9	2.5

Shannon & Wilson TestAmerica Work Order 320-78307-1

ng/L = nanogram per liter (equivalent to parts per trillion)

Agency

Health level is 70 ng/L for PFOS and PFOA combined.

Results are reported as less than the reporting limit (RL) unless otherwise flagged due to quality-

control

Results detected greater than the method detection limit (MDL) and less than the RL.

are laboratory

Results due to a laboratory QC failure. Flag applied by Shannon & Wilson, Inc. (\*)

Results detected, biased high, due to a QC failure. Flag applied by Shannon & Wilson, Inc. (\*)

Reporting limit exists for the associated analyte.

Sample Name:			PW-010	PW-012		PW-037	PW-038	PW-039	PW-040	PW-059	
	Regulatory Level	Units	10/25/2021	10/26/2021	10/26/2021 DUP	10/26/2021	10/26/2021	10/26/2021	10/26/2021	10/27/2021	10/27/2021
	—	ng/L	<1.9	2.1	2.2	<2.1	<1.9	<1.9	<2.0	1.5 J	1.5
	—	ng/L	<1.9	<1.9	<1.9	<2.1	<1.9	<1.9	<2.0	2.5	2.5
	—	ng/L	<1.9	<1.9	<1.9	<2.1	<1.9	<1.9	<2.0	1.7 J	1.7
	—	ng/L	<1.9	<1.9	<1.9	<2.1	<1.9	<1.9	<2.0	<2.0	<2.0
	2,000‡	ng/L	<1.9	<1.9	<1.9	<2.1	<1.9	<1.9	<2.0	1.7 J	1.7
	—	ng/L	<1.9	<1.9	<1.9	<2.1	<1.9	<1.9	<2.0	<2.0	<2.0
	—	ng/L	<1.9	<1.9	<1.9	<2.1	<1.9	<1.9	<2.0	<2.0	<2.0
	—	ng/L	<1.9	<1.9	<1.9	<2.1	<1.9	<1.9	<2.0	<2.0	<2.0
	—	ng/L	<1.9	<1.9	<1.9	<2.1	<1.9	<1.9	<2.0	<2.0	<2.0
	—	ng/L	<1.9	<1.9	<1.9	<2.1	<1.9	<1.9	<2.0	<2.0	<2.0
N-MeFOSAA)	—	ng/L	<4.9	<4.8	<4.7	<5.2	<4.8	<4.9	<5.1	<4.9	<4.9
-EtFOSAA)	—	ng/L	<4.9	<4.8	<4.7	<5.2	<4.8	<4.9	<5.1	<4.9	<4.9
acid (9Cl-PF3ONS)	—	ng/L	<1.9	<1.9	<1.9	<2.1	<1.9	<1.9	<2.0	<2.0	<2.0
acid (11Cl-PF3OUdS)	—	ng/L	<1.9	<1.9	<1.9	<2.1	<1.9	<1.9	<2.0	<2.0	<2.0
	—	ng/L	<1.9	<1.9	<1.9	<2.1	<1.9	<1.9	<2.0	<2.0	<2.0
	10‡	ng/L	<3.9	<3.8	<3.8	<4.2	<3.9	<3.9	<4.1	<3.9	<3.9
	70†	ng/L	<1.9	4.8	4.9	<2.1	<1.9	<1.9	<2.0	1.2 J	1.2
		ng/L	<1.9	<1.9	<1.9	<2.1	<1.9	<1.9	<2.0	5.3	5.3

a work order 320-78307-1

to parts per trillion

cy

l is 70 ng/L for PFOS and PFOA combined.

ess than the reporting limit (RL) unless otherwise flagged due to quality

ted greater than the method detection limit (MDL) and RL. Flag applied by

a laboratory QC failure. Flag applied by Shannon & Wilson, Inc.(\*)

exists for the associated analyte.

Sample Name:		PW-203	PW-211	PW-221	PW-401	PW-414	
Regulatory Level	Units	10/31/2021	10/31/2021 DUP	10/26/2021	10/26/2021	10/26/2021	10/25/2021
—	ng/L	<1.8	<1.8	<2.0	<1.9	5.3	1.4 J
—	ng/L	<1.8	<1.8	<2.0	<1.9	2.3	<2.0
—	ng/L	<1.8	<1.8	<2.0	<1.9	1.2 J	<2.0
—	ng/L	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0
2,000‡	ng/L	<1.8	<1.8	0.51 J	<1.9	0.37 J	<2.0
—	ng/L	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0
—	ng/L	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0
—	ng/L	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0
—	ng/L	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0
—	ng/L	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0
N-MeFOSAA)	ng/L	<4.4	<4.5	2.2 J	<4.9	<4.7	<4.9
-EtFOSAA)	ng/L	<4.4	<4.5	<5.0	<4.9	<4.7	<4.9
acid (9Cl-PF3ONS)	ng/L	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0
acid (11Cl-PF3OUdS)	ng/L	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0
—	ng/L	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0
10‡	ng/L	<3.5	<3.6	<4.0	<3.9	<3.8	<3.9
70†	ng/L	<1.8	<1.8	0.74 J	<1.9	17	0.91 J
	ng/L	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0

a work order 320-78307-1

to parts per trillion

cy

l is 70 ng/L for PFOS and PFOA combined.

ess than the reporting limit (RL) unless otherwise flagged due to quality

ted greater than the method detection limit (MDL) and RL. Flag applied by

a laboratory QC failure. Flag applied by Shannon & Wilson, Inc.(\*)

exists for the associated analyte.

# Water Supply Well Analytical PFAS Results

Sample Name:			NPS Well		PW-010	PW-012		PW-037	PW-038
	Regulatory Limit	Units	2/8/2022 DUP	2/8/2022	2/8/2022	2/9/2022 DUP	2/9/2022	2/8/2022	2/8/2022
oacetic acid (N-MeFOSAA)	-	ng/L	6.9	6.6	<2.0	0.67 J	0.76 J	<2.0	<1.9
	-	ng/L	2.8	2.8	<2.0	<1.9	<1.9	<2.0	<1.9
	-	ng/L	1.6 J	1.6 J	<2.0	<1.9	<1.9	<2.0	<1.9
	-	ng/L	<1.9	<2.0	<2.0	<1.9	<1.9	<2.0	<1.9
	2,000‡	ng/L	0.64 J	0.64 J	<2.0	<1.9	<1.9	<2.0	<1.9
	-	ng/L	<1.9	<2.0	<2.0	<1.9	<1.9	<2.0	<1.9
	-	ng/L	<1.9	<2.0	<2.0	<1.9	<1.9	<2.0	<1.9
	-	ng/L	<1.9	<2.0	<2.0	<1.9	<1.9	<2.0	<1.9
	-	ng/L	<1.9	<2.0	<2.0	<1.9	<1.9	<2.0	<1.9
oacetic acid (N-MeFOSAA)	-	ng/L	<4.9	<4.9	<4.9	<4.7	<4.8	<5.0	<4.6
oacetic acid (N-EtFOSAA)	-	ng/L	<4.9	<4.9	<4.9	<4.7	<4.8	<5.0	<4.6
o-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<1.9	<2.0	<2.0	<1.9	<1.9	<2.0	<1.9
o-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<1.9	<2.0	<2.0	<1.9	<1.9	<2.0	<1.9
(DONA)	-	ng/L	<1.9	<2.0	<2.0	<1.9	<1.9	<2.0	<1.9
d (HFPO-DA)	10‡	ng/L	<3.9	<3.9	<3.9	<3.8	<3.8	<4.0	<3.7
	70‡	ng/L	8.2	8.3	<2.0	2.2	1.9	<2.0	<1.9
		ng/L	2.3	2.0	<2.0	<1.9	<1.9	<2.0	<1.9

Shannon & Wilson Environmental Testing work order 320-84759-1.

Reported as less than parts per trillion (ppt)

Environmental Protection Agency

Reporting level is 70 ng/L for PFOS and PFOA combined.

Reporting limit exists for the associated analyte.

Results reported as less than the reporting limit (RL) unless otherwise flagged due to quality control (QC) failures.

Results detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.

Results due to quality control failures, with high bias. Flag applied by Shannon & Wilson, Inc. (\*)



Sample Well Analytical Data Results

	Sample Name		NPS Well		PW-010	PW-012		PW-037	PW-038
	Regulatory Limit	Units	4/27/2022	4/27/2022 DUP	4/27/2022	4/28/2022	4/28/2022 DUP	4/28/2022	4/28/2022
	—	ng/L	6.1	6.6	<1.9	0.62 J	0.81 J	<1.8	<1.7
	—	ng/L	5.4	5.6	<1.9	<1.7	<1.7	<1.8	<1.7
	—	ng/L	2.8	2.8	<1.9	<1.7	<1.7	<1.8	<1.7
	—	ng/L	0.33 J	0.29 J	<1.9	<1.7	<1.7	<1.8	<1.7
	2,000‡	ng/L	1.2 J	1.3 J	<1.9	<1.7	<1.7	<1.8	<1.7
	—	ng/L	0.30 J	0.37 J	<1.9	<1.7	<1.7	<1.8	<1.7
	—	ng/L	<1.9	<1.8	<1.9	<1.7	<1.7	<1.8	<1.7
	—	ng/L	<1.9	<1.8	<1.9	<1.7	<1.7	<1.8	<1.7
	—	ng/L	<1.9	<1.8	<1.9	<1.7	<1.7	<1.8	<1.7
	—	ng/L	<1.9	<1.8	<1.9	<1.7	<1.7	<1.8	<1.7
ic acid (N-MeFOSAA)	—	ng/L	<4.7	<4.6	<4.7	<4.2	<4.4 J*	<4.5	<4.2
ic acid (N-EtFOSAA)	—	ng/L	<4.7	<4.6	<4.7	<4.2	<4.4	<4.5	<4.2
lionic acid (9Cl-PF3ONS)	—	ng/L	<1.9	<1.8	<1.9	<1.7	<1.7	<1.8	<1.7
lionic acid (11Cl-PF3OUdS)	—	ng/L	<1.9	<1.8	<1.9	<1.7	<1.7	<1.8	<1.7
IA)	—	ng/L	<1.9	<1.8	<1.9	<1.7	<1.7	<1.8	<1.7
PO-DA)	10‡	ng/L	<3.7	<3.7	<3.8	<3.3	<3.5	<3.6	<3.3
	70†	ng/L	9.4	9.3	<1.9	2.6	2.5	<1.8	<1.7
		ng/L	3.4	3.8	<1.9	<1.7	<1.7	<1.8	<1.7

Environmental Testing work order 320-87434-1.

Protection Agency

level is 70 ng/L for PFOS and PFOA combined.

exists for the associated analyte.

ed as less than the reporting limit (RL) unless otherwise flagged due to quality control.

ected greater than the method detection limit (MDL) and less than the RL. Flag applied by





	Regulatory Limit	Sample Name Units	MW-1-15	MW-1-40	MW-2-20			MW-2-30	MW-3-15	MW-3-40	
			8/23/2021	8/23/2021	8/23/2021	8/23/2021	DUP	8/23/2021	8/24/2021	8/24/2021	8/24/2021
)	-	ng/L	0.69 J	<1.8	41	41	<1.8	1.1 JH*	14	13	
	-	ng/L	<1.8	<1.8	67	64	<1.8	<1.8	1.4 J	1.4 J	
	-	ng/L	<1.8	<1.8	39	39	<1.8	<1.8	<1.9	<1.8	
	-	ng/L	<1.8	<1.8	9.8	9.0	<1.8	<1.8	<1.9	<1.8	
	2,000‡	ng/L	<1.8	<1.8	2.2	2.2	1.4 J	0.23 J	1.1 J	1.1 J	
	-	ng/L	<1.8	<1.8	0.79 J	<1.8	<1.8	<1.8	<1.9	<1.8	
	-	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	
	-	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	
	-	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	
acetic acid (N-MeFOSAA)	-	ng/L	<4.5	<4.6	<4.6	<4.5	<4.6	<4.6	<4.6	<4.6	
acetic acid (N-EtFOSAA)	-	ng/L	<4.5	<4.6	<4.6	<4.5	<4.6	<4.6	<4.6	<4.6	
-1-sulfonic acid (9CI-PF3ONS)	-	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	
-1-sulfonic acid (11CI-PF3OUdS)	-	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	
(DONA)	-	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	
(HFPO-DA)	10‡	ng/L	<3.6	<3.7	<3.7	<3.6	<3.7	<3.7	<3.7	<3.7	
	70†	ng/L	<1.8	<1.8	520	520	<1.8	1.8	14	14	
		ng/L	<1.8	<1.8	36	35	<1.8	<1.8	1.3 J	1.2 J	

stAmerica work order 320-78303-1

t to parts per trillion  
ncy

l is 70 ng/L for PFOS and PFOA combined.

less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.  
ory limits.

ected greater than the method detection limit (MDL) and less than the RL. Flag applied by the

o quality control failures. Flag applied by Shannon & Wilson, Inc.(\*).

ed high, due to quality control failures. Flag applied by Shannon & Wilson, Inc.(\*).

exists for the associaed anayte.

	Regulatory Limit	Sample Name Units	MW-5-20	MW-6-20	MW-7-20	MW-8-20	MW-9-30		MW-10-20	MW-11-20
			8/24/2021	8/24/2021	8/24/2021	8/25/2021	8/25/2021	8/25/2021 DUP	8/25/2021	8/27/2021
	-	ng/L	0.92 J	0.69 J	1.0 J	<1.9	9.8	8.6	19	44
	-	ng/L	0.68 J	<1.8	2.9	<1.9	5.3	5.5	15	53
	-	ng/L	<1.8	<1.8	0.75 J	<1.9	1.8	1.9	6.3	13
	-	ng/L	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	1.3 J
	2,000‡	ng/L	0.50 J	<1.8	<1.8	<1.9	0.74 J	0.96 J	1.3 J	11
	-	ng/L	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	1.7 J
	-	ng/L	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8
	-	ng/L	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8
	-	ng/L	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8
	-	ng/L	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8
acetic acid (N-MeFOSAA)	-	ng/L	<4.6	<4.5	<4.5	<4.7	<4.6	<4.7	<4.5	<4.6
acetic acid (N-EtFOSAA)	-	ng/L	<4.6	<4.5	<4.5	<4.7	<4.6	<4.7	<4.5	<4.6
-1-sulfonic acid (9CI-PF3ONS)	-	ng/L	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8
-1-sulfonic acid (11CI-PF3OUdS)	-	ng/L	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8
(DONA)	-	ng/L	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8
(HFPO-DA)	10‡	ng/L	<3.7	<3.6	<3.6	<3.7	<3.7	<3.7	<3.6	<3.7
	70†	ng/L	2.7	<1.8	13	<1.9	42	43	91	59
		ng/L	1.3 J	<1.8	3.4	<1.9	0.95 J	1.2 J	2.1	5.4

stAmerica work order 320-78303-1

t to parts per trillion

ncy

l is 70 ng/L for PFOS and PFOA combined.

less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.

ory limits.

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o quality control failures. Flag applied by Shannon & Wilson, Inc.(\*).

ed high, due to quality control failures. Flag applied by Shannon & Wilson, Inc.(\*).

exists for the associaed anayte.

	Regulatory Limit	Units	MW-12-10	
			8/27/2021	8/27/2021 DUP
)	-	ng/L	11	8.2
	-	ng/L	2.8	2.8
	-	ng/L	3.3	2.9
	-	ng/L	0.55 J	0.55 J
	2,000‡	ng/L	0.50 J	0.21 J
	-	ng/L	<1.8	<1.8
	-	ng/L	<1.8	<1.8
	-	ng/L	<1.8	<1.8
	-	ng/L	<1.8	<1.8
	-	ng/L	<1.8	<1.8
acetic acid (N-MeFOSAA)	-	ng/L	<4.5	<4.6
acetic acid (N-EtFOSAA)	-	ng/L	<4.5	<4.6
-1-sulfonic acid (9CI-PF3ONS)	-	ng/L	<1.8	<1.8
-1-sulfonic acid (11CI-PF3OUdS)	-	ng/L	<1.8	<1.8
(DONA)	-	ng/L	<1.8	<1.8
(HFPO-DA)	10‡	ng/L	<3.6	<3.7
	70†	ng/L	<b>100 J*</b>	<b>36 J*</b>
		ng/L	<b>1.9</b>	2.0

WestAmerica work order 320-78303-1

to parts per trillion  
 accuracy

limit is 70 ng/L for PFOS and PFOA combined.

less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.  
 reporting limits.

detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the

due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

detected high, due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

exists for the associated analyte.

	Regulatory Limit	Sample Name Units	MW-1-15	MW-1-40	MW-2-20		MW-2-30	MW-3-15	MW-3-40
			10/26/2021	10/26/2021	10/26/2021	10/26/2021 DUP	10/26/2021	10/26/2021	10/26/2021
b)	-	ng/L	0.76 J	<1.8	40	39	<1.8	5.8	12
	-	ng/L	<1.8	<1.8	93	90	0.54 J*	0.61 J	1.8 J
	-	ng/L	<1.8	<1.8	49	44	<1.8	<1.9	<1.9
	-	ng/L	<1.8	<1.8	7.0	6.5	<1.8	<1.9	<1.9
	2,000‡	ng/L	<1.8	<1.8	2.6	2.7	1.1 J	0.45 J*	1.0 J
	-	ng/L	<1.8	<1.8	0.72 J*	<1.8 j*	<1.8	<1.9	<1.9
	-	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9
	-	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9
	-	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9
	-	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9
acetic acid (N-MeFOSAA)	-	ng/L	<4.6	<4.5	<4.5	<4.5	<4.5	<4.6	<4.7
acetic acid (N-EtFOSAA)	-	ng/L	<4.6	<4.5	<4.5	<4.5	<4.5	<4.6	<4.7
e-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9
e-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9
(DONA)	-	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9
d (HFPO-DA)	10‡	ng/L	<3.7	<3.6	<3.6	<3.6	<3.6	<3.7	<3.7
	70†	ng/L	<1.8	<1.8	<b>360</b>	<b>330</b>	0.51 J	2.7	12
		ng/L	<1.8	<1.8	<b>24</b>	<b>24</b>	<1.8	<1.9	1.1 J

WestAmerica work order 320-81056-1

Reported in parts per trillion

Agency

Reporting level is 70 ng/L for PFOS and PFOA combined.

Values less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.

Reporting laboratory limit.

Values detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.

	Sample Name		MW-6-20	MW-7-20	MW-8-20	MW-9-30		MW-10-20	MW-11-15
	Regulatory Limit	Units	10/26/2021	10/25/2021	10/25/2021	10/25/2021	10/25/2021 DUP	10/25/2021	10/31/2021
b)	-	ng/L	1.1 J	0.67 J	<1.8	10	9.9	8.4	60
	-	ng/L	<1.8	1.8 J	<1.8	7.7	7.5	6.4	16
	-	ng/L	<1.8	0.61 J	<1.8	2.9	2.9	2.9	10
	-	ng/L	<1.8	<1.9	<1.8	<1.8	<1.9	<1.8	1.3 J
	2,000‡	ng/L	<1.8	0.21 J	<1.8	0.65 J	0.78 J	0.38 J	4.7
	-	ng/L	<1.8	<1.9	<1.8	<1.8	<1.9	<1.8	<1.8
	-	ng/L	<1.8	<1.9	<1.8	<1.8	<1.9	<1.8	<1.8
	-	ng/L	<1.8	<1.9	<1.8	<1.8	<1.9	<1.8	0.72 J
	-	ng/L	<1.8	<1.9	<1.8	<1.8	<1.9	<1.8	<1.8
	-	ng/L	<1.8	<1.9	<1.8	<1.8	<1.9	<1.8	<1.8
acetic acid (N-MeFOSAA)	-	ng/L	<4.6	<4.6	<4.6	<4.6	<4.7	<4.5	<4.5
acetic acid (N-EtFOSAA)	-	ng/L	<4.6	<4.6	<4.6	<4.6	<4.7	<4.5	<4.5
e-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<1.8	<1.9	<1.8	<1.8	<1.9	<1.8	<1.8
e-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<1.8	<1.9	<1.8	<1.8	<1.9	<1.8	<1.8
(DONA)	-	ng/L	<1.8	<1.9	<1.8	<1.8	<1.9	<1.8	<1.8
d (HFPO-DA)	10‡	ng/L	<3.7	<3.7	<3.7	<3.7	<3.7	<3.6	<3.6
	70†	ng/L	<1.8	14	2.3	37	37	81	820
		ng/L	<1.8	2.6	<1.8	0.78 J	0.87 J	1.1 J	9.8

WestAmerica work order 320-81056-1

Reported in parts per trillion

Agency

Reporting level is 70 ng/L for PFOS and PFOA combined.

Values less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.

Reporting laboratory limit.

Values reported greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.

Sample Name:			MW-1-15	MW-1-40	MW-2-20	MW-2-30		MW-3-40
	Regulatory Limit	Units	2/8/2022	2/8/2022	2/9/2022	2/9/2022 DUP	2/9/2022	2/9/2022
b)	-	ng/L	0.64 J	<1.9	52	<1.9	0.61 JH*	6.8 JL*
	-	ng/L	1.1 J	<1.9	190	<1.9	<1.9	1.3 JL*
	-	ng/L	<1.9	<1.9	88	<1.9	<1.9	0.48 JL*
	-	ng/L	<1.9	<1.9	4.9	<1.9	<1.9	<1.9 J*
	2,000‡	ng/L	0.23 J	<1.9	6.2	0.78 J	0.94 J	0.74 JL*
	-	ng/L	<1.9	<1.9	0.65 J	<1.9	<1.9	<1.9 J*
	-	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9 J*
	-	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9 J*
	-	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9 J*
	-	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9 J*
oacetic acid (N-MeFOSAA)	-	ng/L	<4.6	<4.8	<4.6	<4.9	<4.7	<4.8 J*
oacetic acid (N-EtFOSAA)	-	ng/L	<4.6	<4.8	<4.6	<4.9	<4.7	<4.8 J*
e-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9 J*
e-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9 J*
(DONA)	-	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9 J*
d (HFPO-DA)	10‡	ng/L	<3.7	<3.9	<3.7	<3.9	<3.8	<3.8 J*
	70†	ng/L	<1.9	<1.9	260	<1.9	<1.9	7.1 JL*
			<1.9	<1.9	30	<1.9	<1.9	<1.9 J*

Shannon & Wilson Environmental Testing work order 320-84757-1.

U.S. Environmental Protection Agency

Reported as parts per trillion (ppt)

Reporting level is 70 ng/L for PFOS and PFOA combined.

Reporting limit exists for the associated analyte.

Reported as <Reporting Limit (RL) unless otherwise flagged for quality control (QC) failures.

Value exceeds the regulatory limit.

Value detected greater than the method detection limit (MDL) and less than the reporting limit (RL). Flag applied by the laboratory.

Value due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Value biased low due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Value biased high due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Value same preparatory batch as a blank detection for the associated analyte. Flag applied by Shannon & Wilson, Inc. (\*)

	Sample Name:		MW-6-20	MW-8-20		MW-9-30	MW-10-20	MW-11
	Regulatory Limit	Units	2/9/2022	2/7/2022 DUP	2/7/2022	2/10/2022	2/8/2022	2/10/2022
b)	-	ng/L	0.90 J*	<1.9	<1.9	12 JL*	11 JL*	52
	-	ng/L	<1.9	<1.9	<1.9	6.4 JL*	8.7 JL*	12
	-	ng/L	<1.9	<1.9	<1.9	2.8 JL*	1.9 JL*	8.5
	-	ng/L	<1.9	<1.9	<1.9	<1.9 J*	<1.9 J*	0.65 J
	2,000‡	ng/L	<1.9	<1.9	<1.9	0.75 J*	0.73 JL*	1.4 J
	-	ng/L	<1.9	<1.9	<1.9	<1.9 J*	<1.9 J*	<1.9
	-	ng/L	<1.9	<1.9	<1.9	<1.9 J*	<1.9 J*	<1.9
	-	ng/L	<1.9	<1.9	<1.9	<1.9 J*	<1.9 J*	<1.9
	-	ng/L	<1.9	<1.9	<1.9	<1.9 J*	<1.9 J*	<1.9
	-	ng/L	<1.9	<1.9	<1.9	<1.9 J*	<1.9 J*	<1.9
oacetic acid (N-MeFOSAA)	-	ng/L	<4.7	<4.6	<4.8	<4.8 J*	<4.6 J*	<4.7
oacetic acid (N-EtFOSAA)	-	ng/L	<4.7	<4.6	<4.8	<4.8 J*	<4.6 J*	<4.7
e-1-sulfonic acid (9CI-PF3ONS)	-	ng/L	<1.9	<1.9	<1.9	<1.9 J*	<1.9 J*	<1.9
e-1-sulfonic acid (11CI-PF3OUdS)	-	ng/L	<1.9	<1.9	<1.9	<1.9 J*	<1.9 J*	<1.9
(DONA)	-	ng/L	<1.9	<1.9	<1.9	<1.9 J*	<1.9 J*	<1.9
d (HFPO-DA)	10‡	ng/L	<3.8	<3.7	<3.9	<3.8 J*	<3.7 J*	<3.8
	70†	ng/L	<1.9	<1.9	<1.9	45 JL*	26 JL*	120
			<1.9	<1.9	<1.9	1.5 JL*	1.6 JL*	11

Shannon & Wilson Environmental Testing work order 320-84757-1.

EPA Environmental Protection Agency

Reported as parts per trillion (ppt)

Reporting level is 70 ng/L for PFOS and PFOA combined.

Reporting limit exists for the associated analyte.

Reported as <Reporting Limit (RL) unless otherwise flagged for quality control (QC) failures.

Exceeds the regulatory limit.

Reported greater than the method detection limit (MDL) and less than the reporting limit (RL). Flag applied by the laboratory.

Reported low due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Reported low due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Reported high due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Reported as a blank detection for the associated analyte. Flag applied by Shannon & Wilson, Inc. (\*)

Water Analytical P&AS Results

	Sample Name		MW-1-15	MW-1-40	MW-2-20	MW-2-30	MW-3-15	MW-3-40	MW-4-20	MW-5-20
	Regulatory Limit	Units	4/26/2022	4/26/2022	4/26/2022	4/26/2022	4/27/2022	4/27/2022	4/26/2022	4/26/2022
	—	ng/L	<1.9	<1.8	73	<1.9	1.8 J	12	0.91 J	1.7 J
	—	ng/L	<1.9	<1.8	20	<1.9	0.60 J	3.2	<1.9	<1.8
	—	ng/L	<1.9	<1.8	21	<1.9	<1.9	0.56 J	<1.9	<1.8
	—	ng/L	<1.9	<1.8	18	<1.9	<1.9	<1.9	<1.9	<1.8
	2,000‡	ng/L	<1.9	<1.8	2.3	0.62 J	0.55 J	1.5 J	0.19 J	0.44 J
	—	ng/L	<1.9	<1.8	0.53 J	<1.9	<1.9	<1.9	0.31 J	<1.8
	—	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.8
	—	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.8
	—	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.8 J*
	—	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.8
ic acid (N-MeFOSAA)	—	ng/L	<4.7	<4.6	<4.8	<4.7	<4.8	<4.8	<4.8	<4.6
ic acid (N-EtFOSAA)	—	ng/L	<4.7	<4.6	<4.8	<4.7	<4.8	<4.8	<4.8	<4.6
lflonic acid (9Cl-PF3ONS)	—	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.8
lflonic acid (11Cl-PF3OUdS)	—	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.8
IA)	—	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.8
PO-DA)	10‡	ng/L	<3.7	<3.7	<3.8	<3.8	<3.8	<3.8	<3.8	<3.7
	70‡	ng/L	<1.9	<1.8	<b>340</b>	<1.9	<b>2.0</b>	<b>15</b>	<1.9	<b>3.4</b>
			<1.9	<1.8	<b>69</b>	<1.9	<1.9	<b>1.2 J</b>	<1.9	<1.8

Shannon & Wilson Test America work order 320-87432-1.

U.S. Environmental Protection Agency

Reporting level is 70 ng/L for PFOS and PFOA combined.

Results are less than the reporting limit (RL) unless otherwise flagged for quality control (QC)

Reporting laboratory limit.

Results detected greater than the method detection limit (MDL) and less than the reporting limit are reported as laboratory values.

Results are subject to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)



Water Analytical PFS Results

	Sample Name		MW-7-20	MW-8-20		MW-9-30	MW-10-20	MW-11-15	MW-12-10	
	Regulatory Limit	Units	4/26/2022	4/26/2022	4/26/2022 DUP	4/26/2022	4/26/2022	4/28/2022	4/28/2022	4/28/2022 DUP
	—	ng/L	0.74 J	0.73 J	0.83 J	8.9	8.3	35	3.7	3.7
	—	ng/L	<1.9	<1.8	<1.8	5.6	8.4	13	1.6 J	1.5 J
	—	ng/L	0.54 J	<1.8	<1.8	2.3	3.1	5.8	1.8	1.8 J
	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.9	0.76 J*	1.2 J	1.2 J
	2,000‡	ng/L	<1.9	<1.8	<1.8	0.57 J	0.42 J	2.3	<1.8	<1.9
	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.9	<1.9	0.83 J	<1.9
	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9
	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9
	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9
	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9
	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9
	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9
	—	ng/L	<4.7	<4.6	<4.6	<4.7	<4.6	<4.7	<4.6	<4.7
	—	ng/L	<4.7	<4.6	<4.6	<4.7	<4.6	<4.7	<4.6	<4.7
	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9
	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9
	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9
	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9
	10‡	ng/L	<3.8	<3.6	<3.6	<3.7	<3.7	<3.7	<3.6	<3.7
	70‡	ng/L	5.7	<1.8	<1.8	67	62	170	12	12
			1.2 J	<1.8	<1.8	1.3 J	1.2 J	5.9	2.2	2.1

Shannon & Wilson Test America work order 320-87432-1.

U.S. Environmental Protection Agency

Detection level is 70 ng/L for PFOS and PFOA combined.

Values less than the reporting limit (RL) unless otherwise flagged for quality control (QC)

Detection level.

Values detected greater than the method detection limit (MDL) and less than the reporting limit are reported as less than the reporting limit.

Values are subject to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Contaminant	Cleanup Level	Units	MW-11-15					MW-12-10				
			8/27/2021	10/31/2021	2/10/2022	2/10/2022 DUP	4/28/2022	8/27/2021 (DUP)	8/27/2021	10/31/2021 (DUP)	10/31/2021	
Organics	2.2	mg/L	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	
Organics	1.5	mg/L	0.231 J	0.421 J	<0.577 B*	<0.588 B*	0.730	<0.278	<0.278	<0.294	<0.288	
Organics	1.1	mg/L	0.278 J	0.632	<0.481 B*	<0.490 B*	0.885	<0.232	<0.232	<0.245	<0.240	
alene	11	µg/L	<0.0227	<0.0245	<0.0245 J*	<0.0245 J*	<0.0240	<0.0227	<0.0227	<0.0245	<0.0245	
alene	36	µg/L	<0.0227	0.0205 J	<0.0245 J*	<0.0245 J*	<0.0240	<0.0227	<0.0227	0.0162 J	<0.0245	
	530	µg/L	<0.0227	<0.0245	<0.0245 J*	<0.0245 J*	<0.0240	<0.0227	<0.0227	<0.0245	<0.0245	
	260	µg/L	<0.0227	<0.0245	<0.0245 J*	<0.0245 J*	<0.0240	<0.0227	<0.0227	<0.0245	<0.0245	
	43	µg/L	<0.0227	<0.0245	<0.0245	<0.0245	<0.0240	<0.0227	<0.0227	<0.0245	<0.0245	
cene	0.3	µg/L	<0.0227	<0.0245	<0.0245	0.0166 J	<0.0240	<0.0227	<0.0227	<0.0245	<0.0245	
	0.25	µg/L	<0.00910	<0.00980	<0.00980	0.0130 J	<0.00960	<0.00910	<0.00910	<0.00980	<0.00980	
thene	2.5	µg/L	<0.0227	<0.0245	<0.0245	0.0223 J	<0.0240	<0.0227	<0.0227	<0.0245	<0.0245	
ylene	0.26	µg/L	<0.0227	<0.0245	<0.0245	<0.0245	<0.0240	<0.0227	<0.0227	<0.0245	<0.0245	
thene	0.8	µg/L	<0.0227	<0.0245	<0.0245	0.0211 J	<0.0240	<0.0227	<0.0227	<0.0245	<0.0245	
	2	µg/L	<0.0227	<0.0245	<0.0245	0.0153 J	<0.0240	<0.0227	<0.0227	<0.0245	<0.0245	
thracene	0.25	µg/L	<0.00910	<0.00980	<0.00980	0.0121 J	<0.00960	<0.00910	<0.00910	<0.00980	<0.00980	
	260	µg/L	<0.0227	<0.0245	<0.0245	<0.0245	<0.0240	<0.0227	<0.0227	<0.0245	<0.0245	
	290	µg/L	<0.0227	<0.0245	<0.0245 J*	<0.0245 J*	<0.0240	<0.0227	<0.0227	<0.0245	<0.0245	
pyrene	0.19	µg/L	<0.0227	<0.0245	<0.0245	0.0164 J	<0.0240	<0.0227	<0.0227	<0.0245	<0.0245	
	1.7	µg/L	<0.0454	<0.0490	<0.0490 J*	<0.0490 J*	<0.0481	<0.0454	<0.0454	<0.0490	<0.0490	
	170	µg/L	<0.0227	<0.0245	<0.0489	<0.0490	<0.0481	<0.0227	<0.0227	<0.0245	<0.0245	
	120	µg/L	<0.0227	<0.0245	<0.0245	<0.0245	<0.0240	<0.0227	<0.0227	<0.0245	<0.0245	
	4.6	µg/L	<0.250	0.350 J	<0.249	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	
	15	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	
	190 (total)	µg/L	<1.00	<1.00	<0.500	<0.500	<1.00	<1.00	<1.00	<1.00	<1.00	
		µg/L	<0.500	<0.500	<1.00	<1.00	<0.500	<0.500	<0.500	<0.500	<0.500	
	1,100	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	
	190	µg/L	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	

Reported from SGS North America laboratory report 1215590.

For Cleanup Levels from 18 AAC 75.341 Table C - Groundwater Human Health Cleanup Level.

Department of Environmental Conservation

Aromatic hydrocarbons

Benzo(a)anthracene, ethylbenzene, and xylenes

or

Water

Not detected; reported as less than the limit of detection (LOD) unless otherwise noted due to quality control failure.

Concentration, detected greater than the detection limit (DL) and less than the limit of quantitation (LOQ). Flag applied by the laboratory.

**POET PFAS and Arsenic Analytical Results**

			PW-200									
Sample Date			8/24/2021			10/25/2021			2/8/2022			
	Applicable Limit	Units	Sink	C-Port Composite	Pre-treatment	Sink	C-Port Composite	Pre-treatment	Sink	C-Port Composite	Pre-treatment	Sink
	—	ng/L	<1.7	<1.6	15	<1.9	<1.9	10	<1.8	<1.7	8.8	<1.9
	—	ng/L	<1.7	<1.6	9.5	<1.9	<1.9	6.9	<1.8	<1.7	5.0	<1.9
	—	ng/L	<1.7	<1.6	4.3	<1.9	<1.9	2.8	<1.8	<1.7	2.3	<1.9
	—	ng/L	<1.7	<1.6	<1.7	<1.9	<1.9	<1.9	<1.8	<1.7	<1.8	<1.9
	2,000	ng/L	<1.7	<1.6	0.98 J	<1.9	<1.9	0.57 J	<1.8	<1.7	<1.8	<1.9
	—	ng/L	<1.7	<1.6	<1.7	<1.9	<1.9	<1.9	<1.8	<1.7	<1.8	<1.9
	—	ng/L	<1.7	<1.6	<1.7	<1.9	<1.9	<1.9	<1.8	<1.7	<1.8	<1.9
	—	ng/L	<1.7	<1.6	<1.7	<1.9	<1.9	<1.9	<1.8	<1.7	<1.8	<1.9
	—	ng/L	<1.7	<1.6	<1.7	<1.9	<1.9	<1.9	<1.8	<1.7	<1.8	<1.9
	—	ng/L	<1.7	<1.6	<1.7	<1.9	<1.9	<1.9	<1.8	<1.7	<1.8	<1.9
ic acid (N-	—	ng/L	<4.3	<4.1	<4.2	<4.7	<4.8	<4.7	<1.8	<1.7	<1.8	<4.7
c acid (N-EtFOSAA)	—	ng/L	<4.3	<4.1	<4.2	<4.7	<4.8	<4.7	<1.8	<1.7	<1.8	<4.7
ulfonic acid (9Cl-	—	ng/L	<1.7	<1.6	<1.7	<1.9	<1.9	<1.9	<1.8	<1.7	<1.8	<1.9
ulfonic acid (11Cl-	—	ng/L	<1.7	<1.6	<1.7	<1.9	<1.9	<1.9	<1.8	<1.7	<1.8	<1.9
NA)	—	ng/L	<1.7	<1.6	<1.7	<1.9	<1.9	<1.9	<1.8	<1.7	<1.8	<1.9
PO-DA)	10	ng/L	<3.4	<3.2	<3.4	<3.7	<3.9	<3.7	<1.8	<1.7	<1.8	<3.7
	70	ng/L	<1.7	<1.6	58	<1.9	<1.9	54	<1.8	<1.7	62	<1.9
		ng/L	<1.7	<1.6	1.8	<1.9	<1.9	1.2 J	<1.8	<1.7	1.0 J	<1.9
	10	µg/L	<2.50	—	35.5	<2.50	<2.50	13.4	<2.50	—	20.5	<2.5

urofins work orders 320-78305-1, 320-81058-1, 320-84756-1, 320-87436-1; and SGS work orders 1215600, 1217255, 12205999, and 1221942.

limit exists for the associated analyte or the associated analyte was not reported for this sample.  
 ted as less than the reporting limit (RL) unless otherwise flagged due to quality-control failures.  
 , detected greater than the detection limit (DL) and less than the RL. Flag applied by the laboratory.  
 applicable limits.

Sample Name	Units	Airport Terminal		City Hall	Firehouse	NPS Well							
		8/27/2018	3/8/2019	9/27/2018	9/27/2018	8/27/2018	9/25/2018	3/7/2019	6/8/2019	10/11/2019 DUP	10/11/2019	9/2/2020 DUP	9/2/2020
	ng/L	31	30	<2.0	2.3	12	11	13	14	10	9.3	7.3	7.4
	ng/L	—	—	--	--	--	--	--	--	2.2	1.8 J	4.2	4.3
	ng/L	5.7	5.9	<2.0	<2.0	1.8 J	1.7 J	1.9 J	1.8 J	1.4 J	1.3 J	1.5 J	1.5 J
	ng/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.8	<1.9	<1.9	<1.8
	ng/L	4.5	4.3	<2.0	<2.0	1.3 J	1.2 J	1.4 J	1.5 J	1.0 J*	0.73 J*	0.85 J	0.84 J
	ng/L	--	--	--	--	--	--	--	--	<1.8	<1.9	<1.9	<1.8
	ng/L	--	--	--	--	--	--	--	--	<1.8	<1.9	<1.9	<1.8
	ng/L	--	--	--	--	--	--	--	--	<1.8	<1.9	<1.9	<1.8
	ng/L	--	--	--	--	--	--	--	--	<1.8	<1.9	<1.9	<1.8
etic acid (N-MeFOSAA)	ng/L	--	--	--	--	--	--	--	--	<1.8	<1.9	<1.9	<1.8
c acid (N-EtFOSAA)	ng/L	--	--	--	--	--	--	--	--	<1.8	<1.9	<1.9	<1.8
sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	--	--	--	--	--	<1.8	<1.9	<1.9	<1.8
sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	--	--	--	--	--	<1.8	<1.9	<1.9	<1.8
NA)	ng/L	--	--	--	--	--	--	--	--	<1.8	<1.9	<1.9	<1.8
FPO-DA)	ng/L	--	--	--	--	--	--	--	--	4.0 J*	<1.9 J*	<1.9	<1.8
	ng/L	250	270	<2.0	<2.0	23	22	13	16	19	18	9.7	10
	ng/L	4.3	<3.5 B*	<2.0	<2.0	4.6	4.3	3.5	<3.4 B*	2.9	2.8	1.9	2.0
	ng/L	<b>254</b>	<b>270 B*‡</b>	N/A	N/A	28	26	17	16 B*‡	22	21	12	12

stances  
 nt to parts per trillion (ppt)  
 orted as less than the Reporting Limit (RL).  
 ds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.  
 cted greater than the method detection limit (MDL) and less than the reporting  
 laboratory.  
 e preparatory batch as a blank detection for the associated analyte. Flag  
 , Inc. (\*)  
 o quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)  
 ombined concentration includes one or more result that is not detected greater  
 concentration could not be calculated because PFOS and PFOA were not  
 .

Sample Name	Units	NPS Well (cont'd)					PW-001			PW-002			
		8/25/2021 DUP	8/25/2021	2/8/2022 DUP	2/8/2022	4/27/2022 DUP	4/27/2022	8/28/2018	3/7/2019	6/7/2019	8/28/2018	3/9/2019	6/8/2019
	ng/L	7.7	8.2	6.9	6.6	6.1	6.6	350	320	489	32	21	20
	ng/L	4.0	3.7	2.8	2.8	5.4	5.6	--	--	216	--	--	--
	ng/L	2.1	2.1	1.6 J	1.6 J	2.8	2.8	13	17	26	4.4	3.4	1.8 J
	ng/L	<1.8	<1.9	<1.9	<2.0	0.33 J	0.29 J	3.0	2.3	4.2	<2.0	<2.0	<2.0
	ng/L	1.2 J	1.2 J	0.64 J	0.64 J	1.2 J	1.3 J	20	21	25	2.2	1.8 J	1.9 J
	ng/L	<1.8	<1.9	<1.9	<2.0	0.30 J	0.37 J	--	--	<2.0	--	--	--
	ng/L	<1.8	<1.9	<1.9	<2.0	<1.9	<1.8	--	--	<2.0 J*	--	--	--
	ng/L	<1.8	<1.9	<1.9	<2.0	<1.9	<1.8	--	--	<2.0 J*	--	--	--
	ng/L	<1.8	<1.9	<1.9	<2.0	<1.9	<1.8	--	--	<2.0 J*	--	--	--
etic acid (N-MeFOSAA)	ng/L	<4.6	<4.9	<4.9	<4.9	<4.7	<4.6	--	--	<8.0 J*	--	--	--
c acid (N-EtFOSAA)	ng/L	<4.6	<4.9	<4.9	<4.9	<4.7	<4.6	--	--	<8.0	--	--	--
sulfonic acid (9Cl-PF3ONS)	ng/L	<1.8	<1.9	<1.9	<2.0	<1.9	<1.8	--	--	--	--	--	--
sulfonic acid (11Cl-PF3OUdS)	ng/L	<1.8	<1.9	<1.9	<2.0	<1.9	<1.8	--	--	--	--	--	--
NA)	ng/L	<1.8	<1.9	<1.9	<2.0	<1.9	<1.8	--	--	--	--	--	--
FPO-DA)	ng/L	<3.7	<3.9	<3.9	<3.9	<3.7	<3.7	--	--	--	--	--	--
	ng/L	7.8	8.1	8.2	8.3	9.4	9.3	<b>2,300</b>	<b>1,200</b>	<b>2,880</b>	<b>160</b>	<b>72</b>	33
	ng/L	3.7	3.3	2.3	2.0	3.4	3.8	19	13	24	3.0	<2.0 B*	1.8 J
	ng/L	12	11	11	10	13	13	<b>2,319</b>	<b>1,213</b>	<b>2,904</b>	<b>163</b>	<b>72 B*†</b>	35 J

stances  
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 ds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.  
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 laboratory.  
 e preparatory batch as a blank detection for the associated analyte. Flag  
 , Inc. (\*)  
 o quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)  
 ombined concentration includes one or more result that is not detected greater  
 concentration could not be calculated because PFOS and PFOA were not  
 .

Sample Name	PW-005	PW-007	PW-008	PW-009	PW-010							
Units	8/28/2018	8/28/2018	8/28/2018	8/28/2018	8/29/2018	6/9/2019	10/12/2019 DUP	10/12/2019	9/2/2020	12/30/2020	3/24/2021	6/22/2021
ng/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.5	2.9	0.60 J	<1.8	<1.8	<1.9
ng/L	--	--	--	--	--	--	0.97 J	1.0 J	<1.9	<1.8	<1.8	<1.9
ng/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9
ng/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9
ng/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9
ng/L	--	--	--	--	--	--	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9
ng/L	--	--	--	--	--	--	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9
ng/L	--	--	--	--	--	--	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9
ng/L	--	--	--	--	--	--	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9
ng/L	--	--	--	--	--	--	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9
ng/L	--	--	--	--	--	--	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9
ng/L	--	--	--	--	--	--	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9
ng/L	--	--	--	--	--	--	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9
ng/L	--	--	--	--	--	--	<1.9	<2.0	<1.9	<1.8	<4.4	<4.8
ng/L	--	--	--	--	--	--	<1.9	<2.0	<1.9	<1.8	<4.4	<4.8
ng/L	--	--	--	--	--	--	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9
ng/L	--	--	--	--	--	--	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9
ng/L	--	--	--	--	--	--	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9
ng/L	--	--	--	--	--	--	<1.9	<2.0	<1.9	<1.8	<3.5	<3.8
ng/L	<2.0	5.6	<2.0	<2.0	<2.0	<2.0	2.0	2.2	0.88 J	0.46 J	0.79 J	<1.9
ng/L	0.90 J	1.2 J	1.3 J	<2.0	<2.0	<2.0	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9
ng/L	0.90 J‡	6.8 J	1.3 J‡	N/A	N/A	N/A	2.0 ‡	2.2 ‡	0.88 J‡	0.46 J‡	0.79 J‡	N/A

stances  
 nt to parts per trillion (ppt)  
 orted as less than the Reporting Limit (RL).  
 ds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.  
 cted greater than the method detection limit (MDL) and less than the reporting  
 laboratory.  
 e preparatory batch as a blank detection for the associated analyte. Flag  
 , Inc. (\*)  
 o quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)  
 ombined concentration includes one or more result that is not detected greater  
 concentration could not be calculated because PFOS and PFOA were not  
 .

Sample Name	PW-010 (cont'd)		PW-011					PW-012				
Units	2/8/2022	4/27/2022	8/29/2018	9/25/2018	3/8/2019	6/8/2019 DUP	6/8/2019	8/29/2018	3/8/2019	6/8/2019	10/12/2019	9/3/2020 DUP
ng/L	<2.0	<1.9	30	34	32	23	23	8.9	11	7.0	9.3	4.7
ng/L	<2.0	<1.9	--	--	--	--	--	--	--	--	2.8	1.2 J
ng/L	<2.0	<1.9	3.4	3.1	4.5	3.5	3.4	0.81 J	0.87 J	<2.0	0.86 J	<1.9
ng/L	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9
ng/L	<2.0	<1.9	2.9	3.2	2.4	1.9 J	1.8 J	1.8 J	1.5 J	1.1 J	0.99 J	0.50 J
ng/L	<2.0	<1.9	--	--	--	--	--	--	--	--	<1.9	<1.9
ng/L	<2.0	<1.9	--	--	--	--	--	--	--	--	<1.9	<1.9
ng/L	<2.0	<1.9	--	--	--	--	--	--	--	--	<1.9	<1.9
ng/L	<2.0	<1.9	--	--	--	--	--	--	--	--	<1.9	<1.9
ng/L	<2.0	<1.9	--	--	--	--	--	--	--	--	<1.9	<1.9
ng/L	<2.0	<1.9	--	--	--	--	--	--	--	--	<1.9	<1.9
ng/L	<2.0	<1.9	--	--	--	--	--	--	--	--	<1.9	<1.9
ng/L	<2.0	<1.9	--	--	--	--	--	--	--	--	<1.9	<1.9
ng/L	<2.0	<1.9	--	--	--	--	--	--	--	--	<1.9	<1.9
ng/L	<2.0	<1.9	--	--	--	--	--	--	--	--	<1.9	<1.9
ng/L	<2.0	<1.9	--	--	--	--	--	--	--	--	<1.9	<1.9
ng/L	<2.0	<1.9	--	--	--	--	--	--	--	--	<1.9	<1.9
ng/L	<2.0	<1.9	--	--	--	--	--	--	--	--	<1.9	<1.9
ng/L	<2.0	<1.9	--	--	--	--	--	--	--	--	<1.9	<1.9
ng/L	<2.0	<1.9	--	--	--	--	--	--	--	--	<1.9	<1.9
ng/L	<2.0	<1.9	--	--	--	--	--	--	--	--	<1.9	<1.9
ng/L	<2.0	<1.9	--	--	--	--	--	--	--	--	<1.9	<1.9
ng/L	<2.0	<1.9	--	--	--	--	--	--	--	--	<1.9	<1.9
ng/L	<2.0	<1.9	--	--	--	--	--	--	--	--	<1.9	<1.9
ng/L	<2.0	<1.9	93	80	96	82	80	7.7	25	14	13	15
ng/L	<2.0	<1.9	3.3	3.1	<2.6 B*	2.0	<2.2 B*	0.77 J	<2.0 B*	0.81 J	0.74 J	<1.9
ng/L	N/A	N/A	96	83	96 B*†	84	80 B*†	8.5 J	25 B*†	15 J	14 J	15 †

stances

nt to parts per trillion (ppt)

orted as less than the Reporting Limit (RL).

ds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.

ected greater than the method detection limit (MDL) and less than the reporting laboratory.

preparatory batch as a blank detection for the associated analyte. Flag

, Inc. (\*)

o quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

ombined concentration includes one or more result that is not detected greater

concentration could not be calculated because PFOS and PFOA were not

.

Sample Name	Units	PW-012 (cont'd)											
		3/24/2021 DUP	3/24/2021	6/21/2021 DUP	6/21/2021	8/26/2021 DUP	8/26/2021	10/26/2021 DUP	10/26/2021	2/9/2022 DUP	2/9/2022	4/28/2022 DUP	4/28/2022
	ng/L	1.3 J	1.5 J	5.2	4.8	1.9	2.3	2.1	2.2	0.67 J	0.76 J	0.62 J	0.81 J
	ng/L	0.62 J	<1.8	<2.1	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.7	<1.7
	ng/L	<1.8	<1.8	<2.1	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.7	<1.7
	ng/L	<1.8	<1.8	<2.1	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.7	<1.7
	ng/L	<1.8	<1.8	0.27 J	0.21 J	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.7	<1.7
	ng/L	<1.8	<1.8	<2.1	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.7	<1.7
	ng/L	<1.8	<1.8	<2.1	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.7	<1.7
	ng/L	<1.8	<1.8	<2.1	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.7	<1.7
	ng/L	<1.8	<1.8	<2.1	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.7	<1.7
	ng/L	<1.8	<1.8	<2.1	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.7	<1.7
etic acid (N-MeFOSAA)	ng/L	<4.4	<4.4	<5.2	<5.0	<4.7	<4.7	<4.8	<4.7	<4.7	<4.8	<4.2	<4.4 J*
c acid (N-EtFOSAA)	ng/L	<4.4	<4.4	<5.2	<5.0	<4.7	<4.7	<4.8	<4.7	<4.7	<4.8	<4.2	<4.4
sulfonic acid (9Cl-PF3ONS)	ng/L	<1.8	<1.8	<2.1	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.7	<1.7
sulfonic acid (11Cl-PF3OUdS)	ng/L	<1.8	<1.8	<2.1	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.7	<1.7
NA)	ng/L	<1.8	<1.8	<2.1	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.7	<1.7
FPO-DA)	ng/L	<3.5	<3.5	<4.2	<4.0	<3.8	<3.8	<3.8	<3.8	<3.8	<3.8	<3.3	<3.5
	ng/L	6.1	7.7	5.5	5.6	4.2	4.3	4.8	4.9	2.2	1.9	2.6	2.5
	ng/L	<1.8	<1.8	<2.1	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.7	<1.7
	ng/L	6.1 ‡	7.7 ‡	5.5 ‡	5.6 ‡	4.2 ‡	4.3 ‡	4.8 ‡	4.9 ‡	2.2 ‡	1.9 ‡	2.6 ‡	2.5 ‡

stances  
 nt to parts per trillion (ppt)  
 orted as less than the Reporting Limit (RL).  
 ds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.  
 cted greater than the method detection limit (MDL) and less than the reporting  
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 , Inc. (\*)  
 o quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)  
 ombined concentration includes one or more result that is not detected greater  
 concentration could not be calculated because PFOS and PFOA were not  
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Sample Name	PW-014	PW-015	PW-016		PW-017	PW-018	PW-019	PW-020	PW-021	PW-022			
Units	8/29/2018	8/29/2018	8/30/2018	12/29/2020	8/30/2018	8/30/2018	8/30/2018	8/30/2018	8/30/2018	8/30/2018	8/30/2018	3/7/2019	6/7/2019 DUP
ng/L	<2.0	<2.0	1.7 J	1.3 J	<2.0	1.2 J	<2.0	<2.0	<2.0	<2.0	58	230	19
ng/L	--	--	--	7.3	--	--	--	--	--	--	--	--	--
ng/L	<2.0	<2.0	<2.0	3.4	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	4.8	20	1.8 J
ng/L	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	1.7 J I	<2.0
ng/L	<2.0	<2.0	<2.0	1.2 J	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	6.4	28	1.4 J
ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
ng/L	<2.0	<2.0	<2.0	0.69 J	<2.0	2.5	<2.0	<2.0	<2.0	<2.0	<b>520</b>	<b>1,500</b>	<b>120</b>
ng/L	<2.0	<2.0	1.3 J	8.6	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	6.9	25	1.3 J
ng/L	N/A	N/A	1.3 J ‡	9.3 J	N/A	2.5 ‡	N/A	N/A	N/A	N/A	<b>527</b>	<b>1,525</b>	<b>121 J</b>

stances  
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 orted as less than the Reporting Limit (RL).  
 ds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.  
 cted greater than the method detection limit (MDL) and less than the reporting  
 laboratory.  
 e preparatory batch as a blank detection for the associated analyte. Flag  
 , Inc. (\*)  
 o quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)  
 ombined concentration includes one or more result that is not detected greater  
 concentration could not be calculated because PFOS and PFOA were not  
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Sample Name		PW-032		PW-033	PW-034	PW-036	PW-037						
	Units	8/28/2018	9/1/2020	8/28/2018	8/28/2018	8/28/2018	8/31/2018	3/8/2019	6/7/2019	10/11/2019	9/1/2020	12/31/2020	3/25/2021
	ng/L	<2.0	<1.9	<2.0	1.1 J	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.8	<1.7
	ng/L	--	<1.9	--	--	--	--	--	--	<1.9	<1.9	<1.8	<1.7
	ng/L	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.8	<1.7
	ng/L	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.8	<1.7
	ng/L	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.8	<1.7
	ng/L	--	<1.9	--	--	--	--	--	--	<1.9	<1.9	<1.8	<1.7
	ng/L	--	<1.9	--	--	--	--	--	--	<1.9	<1.9	<1.8	<1.7
	ng/L	--	<1.9	--	--	--	--	--	--	<1.9	<1.9	<1.8	<1.7
	ng/L	--	<1.9	--	--	--	--	--	--	<1.9	<1.9	<1.8	<1.7
etic acid (N-MeFOSAA)	ng/L	--	<1.9	--	--	--	--	--	--	<1.9	<1.9	<1.8	<4.4
c acid (N-EtFOSAA)	ng/L	--	<1.9	--	--	--	--	--	--	<1.9	<1.9	<1.8	<4.4
sulfonic acid (9Cl-PF3ONS)	ng/L	--	<1.9	--	--	--	--	--	--	<1.9	<1.9	<1.8	<1.7
sulfonic acid (11Cl-PF3OUdS)	ng/L	--	<1.9	--	--	--	--	--	--	<1.9	<1.9	<1.8	<1.7
NA)	ng/L	--	<1.9	--	--	--	--	--	--	<1.9	<1.9	<1.8	<1.7
FPO-DA)	ng/L	--	<1.9	--	--	--	--	--	--	0.89 J	<1.9	<1.8	<3.5
	ng/L	<2.0	<1.9	<2.0	1.5 J	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.8	<1.7
	ng/L	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.8	<1.7
	ng/L	N/A	N/A	N/A	1.5 J‡	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

stances  
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 orted as less than the Reporting Limit (RL).  
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 , Inc. (\*)  
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Sample Name	Units	PW-038 (cont'd)			PW-039								
		10/26/2021	2/8/2022	4/28/2022	8/29/2018 DUP	8/29/2018	3/8/2019 DUP	3/8/2019	6/8/2019	10/11/2019	9/1/2020	12/31/2020	3/25/2021
	ng/L	<1.9	<1.9	<1.7	<2.0	<2.0	<2.0	<2.0	<2.0	<1.8	<1.9	<1.8	<1.8
	ng/L	<1.9	<1.9	<1.7	--	--	--	--	--	<1.8	<1.9	0.54 J	<1.8
	ng/L	<1.9	<1.9	<1.7	<2.0	<2.0	<2.0	<2.0	<2.0	<1.8	<1.9	<1.8	<1.8
	ng/L	<1.9	<1.9	<1.7	<2.0	<2.0	<2.0	<2.0	<2.0	<1.8	<1.9	<1.8	<1.8
	ng/L	<1.9	<1.9	<1.7	<2.0	<2.0	<2.0	<2.0	<2.0	<1.8	<1.9	<1.8	<1.8
	ng/L	<1.9	<1.9	<1.7	--	--	--	--	--	<1.8	<1.9	<1.8	<1.8
	ng/L	<1.9	<1.9	<1.7	--	--	--	--	--	<1.8	<1.9	<1.8	<1.8
	ng/L	<1.9	<1.9	<1.7	--	--	--	--	--	<1.8	<1.9	<1.8	<1.8
	ng/L	<1.9	<1.9	<1.7	--	--	--	--	--	<1.8	<1.9	<1.8	<1.8
	ng/L	<1.9	<1.9	<1.7	--	--	--	--	--	<1.8	<1.9	<1.8	<1.8
etic acid (N-MeFOSAA)	ng/L	<4.8	<4.6	<4.2	--	--	--	--	--	<1.8	<1.9	<1.8	<4.5
c acid (N-EtFOSAA)	ng/L	<4.8	<4.6	<4.2	--	--	--	--	--	<1.8	<1.9	<1.8	<4.5
sulfonic acid (9Cl-PF3ONS)	ng/L	<1.9	<1.9	<1.7	--	--	--	--	--	<1.8	<1.9	<1.8	<1.8
sulfonic acid (11Cl-PF3OUdS)	ng/L	<1.9	<1.9	<1.7	--	--	--	--	--	<1.8	<1.9	<1.8	<1.8
NA)	ng/L	<1.9	<1.9	<1.7	--	--	--	--	--	<1.8	<1.9	<1.8	<1.8
FPO-DA)	ng/L	<3.9	<3.7	<3.3	--	--	--	--	--	<1.8	<1.9	<1.8	<3.6
	ng/L	<1.9	<1.9	<1.7	<2.0	<2.0	<2.0	<2.0	<2.0	<1.8	<1.9	<1.8	<1.8
	ng/L	<1.9	<1.9	<1.7	<2.0	0.79 J	<2.0	<2.0	<2.0	<1.8	<1.9	<1.8	<1.8
	ng/L	N/A	N/A	N/A	N/A	0.79J†	N/A	N/A	N/A	N/A	N/A	N/A	N/A

stances  
 nt to parts per trillion (ppt)  
 orted as less than the Reporting Limit (RL).  
 ds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.  
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 , Inc. (\*)  
 o quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)  
 ombined concentration includes one or more result that is not detected greater  
 concentration could not be calculated because PFOS and PFOA were not  
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Sample Name		PW-040 (cont'd)		PW-041	PW-042	PW-043	PW-044	PW-045			PW-046		
	Units	2/9/2022	4/28/2022	8/28/2018	8/29/2018	8/29/2018	8/29/2018	8/29/2018	10/11/2019	6/22/2021	8/30/2018 DUP	8/30/2018	3/8/2019
	ng/L	<1.9	<1.8	<2.0	<2.0	<2.0	<2.0	<2.0	0.48 J	0.94 J	1,900	1,700	320
	ng/L	<1.9	<1.8	--	--	--	--	--	<1.9	<1.9	--	--	--
	ng/L	<1.9	<1.8	<2.0	<2.0	0.94 J	<2.0	<2.0	<1.9	<1.9	29	27	6.2
	ng/L	<1.9	<1.8	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<2.0	<2.0	<2.0
	ng/L	<1.9	<1.8	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	120	110	20
	ng/L	<1.9	<1.8	--	--	--	--	--	<1.9	<1.9	--	--	--
	ng/L	<1.9	<1.8	--	--	--	--	--	<1.9	<1.9	--	--	--
	ng/L	<1.9	<1.8	--	--	--	--	--	<1.9	<1.9	--	--	--
	ng/L	<1.9	<1.8	--	--	--	--	--	<1.9	<1.9	--	--	--
etic acid (N-MeFOSAA)	ng/L	<4.7	<4.5	--	--	--	--	--	<1.9	<4.8	--	--	--
c acid (N-EtFOSAA)	ng/L	<4.7	<4.5	--	--	--	--	--	<1.9	<4.8	--	--	--
sulfonic acid (9Cl-PF3ONS)	ng/L	<1.9	<1.8	--	--	--	--	--	<1.9	<1.9	--	--	--
sulfonic acid (11Cl-PF3OUdS)	ng/L	<1.9	<1.8	--	--	--	--	--	<1.9	<1.9	--	--	--
NA)	ng/L	<1.9	<1.8	--	--	--	--	--	<1.9	<1.9	--	--	--
FPO-DA)	ng/L	<3.8	<3.6	--	--	--	--	--	<1.9	<3.9	--	--	--
	ng/L	<1.9	<1.8	<2.0	<2.0	6.6	2.0	<2.0	0.79 J	0.99 J	<b>83</b>	<b>79</b>	63
	ng/L	<1.9	<1.8	<2.0	<2.0	7.6	1.3 J	<2.0	<1.9	<1.9	<b>82</b>	<b>77</b>	20 B
	ng/L	N/A	N/A	N/A	N/A	14	3.3 J	N/A	0.79 J‡	0.99 J‡	<b>165</b>	<b>156</b>	<b>83 B</b>

stances  
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 o quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)  
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Sample Name	Units	PW-048		PW-059									
		8/31/2018	6/9/2019	8/29/2018	3/7/2019	6/9/2019	10/12/2019	9/1/2020	12/30/2020	3/24/2021	6/21/2021	8/23/2021	10/27/2021
	ng/L	<2.0	<2.0	1.2 J	0.98 J	<2.0	1.1 J	0.78 J	1.6 J	1.7	2.1	1.5 J	1.5 J
	ng/L	--	<2.0	--	--	--	<1.9	<1.9	0.55 J	1.1 J	1.3 J	<2.0	2.5
	ng/L	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	0.26 J	0.33 J	<2.0	1.7 J
	ng/L	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	<1.7	<2.0	<2.0	<2.0
	ng/L	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	0.75 J	0.72 J	1.3 J	0.81 J	<2.0	1.7 J
	ng/L	--	<2.0	--	--	--	<1.9	<1.9	<1.9	<1.7	<2.0	<2.0	<2.0
	ng/L	--	<2.0 J*	--	--	--	<1.9	<1.9	<1.9	<1.7	<2.0	<2.0	<2.0
	ng/L	--	<2.0 J*	--	--	--	<1.9	<1.9	<1.9	<1.7	<2.0	<2.0	<2.0
	ng/L	--	<2.0	--	--	--	<1.9	<1.9	<1.9	<1.7	<2.0	<2.0	<2.0
	ng/L	--	<2.0	--	--	--	<1.9	<1.9	<1.9	<1.7	<2.0	<2.0	<2.0
etic acid (N-MeFOSAA)	ng/L	--	<8.0	--	--	--	<1.9	<1.9	<1.9	<4.3	<5.0	<5.0	<4.9
c acid (N-EtFOSAA)	ng/L	--	<8.0	--	--	--	<1.9	<1.9	<1.9	<4.3	<5.0	<5.0	<4.9
sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	--	--	<1.9	<1.9	<1.9	<1.7	<2.0	<2.0	<2.0
sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	--	--	<1.9	<1.9	<1.9	<1.7	<2.0	<2.0	<2.0
NA)	ng/L	--	--	--	--	--	<1.9	<1.9	<1.9	<1.7	<2.0	<2.0	<2.0
FPO-DA)	ng/L	--	--	--	--	--	<1.9	<1.9	<1.9	<3.4	<4.0	<4.0	<3.9
	ng/L	<2.0	<2.0 J*	<2.0	<2.0	<2.0	<1.9	<1.9	1.0 J	1.6 J	1.4 J	<2.0	1.2 J
	ng/L	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	0.70 J	0.96 J	<2.0	0.85 JH*	5.3
	ng/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.7 J	2.6 J	1.4 J‡	0.85 JH*‡	6.5 J

stances  
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 concentration could not be calculated because PFOS and PFOA were not  
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Sample Name		PW-061			PW-062	PW-066	PW-070	PW-071	PW-074		PW-075	PW-201	
	Units	8/27/2018	9/1/2020	8/26/2021	6/22/2021	12/8/2018	8/31/2018	6/8/2019	9/25/2018 DUP	9/25/2018	8/31/2018	9/25/2018	12/30/202
	ng/L	1.3 J	0.85 J	0.93 J	<2.0	<2.0	1.4 J	<2.0	1.1 J	1.1 J	<2.0	1.7 J	1.3 J
	ng/L		1.5 J	0.84 J	0.63 J	--	--	--	--	--	--	--	2.1
	ng/L	1.3 J	0.82 J	<1.9	0.39 J	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	1.3 J
	ng/L	<2.0	<1.9	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9
	ng/L	<2.0	0.49 J	0.38 J	0.23 J	<2.0	1.8 J	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9
	ng/L	--	<1.9	<1.9	<2.0	--	--	--	--	--	--	--	<1.9
	ng/L	--	<1.9	<1.9	<2.0	--	--	--	--	--	--	--	<1.9
	ng/L	--	<1.9	<1.9	<2.0	--	--	--	--	--	--	--	<1.9
	ng/L	--	<1.9	<1.9	<2.0	--	--	--	--	--	--	--	<1.9
etic acid (N-MeFOSAA)	ng/L	--	<1.9	<4.8	<4.9	--	--	--	--	--	--	--	<1.9
c acid (N-EtFOSAA)	ng/L	--	<1.9	<4.8	<4.9	--	--	--	--	--	--	--	<1.9
sulfonic acid (9Cl-PF3ONS)	ng/L	--	<1.9	<1.9	<2.0	--	--	--	--	--	--	--	<1.9
sulfonic acid (11Cl-PF3OUdS)	ng/L	--	<1.9	<1.9	<2.0	--	--	--	--	--	--	--	<1.9
NA)	ng/L	--	<1.9	<1.9	<2.0	--	--	--	--	--	--	--	<1.9
FPO-DA)	ng/L	--	<1.9	<3.8	<3.9	--	--	--	--	--	--	--	<1.9
	ng/L	1.4 J	0.49 J	<1.9	1.2 J	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	1.4 J	2.1
	ng/L	3.8	1.9	1.8 J	<2.0	<2.0	1.0 J	0.82 J	<2.0	<2.0	1.4 J	<2.0	0.97 J
	ng/L	5.2 J	2.4 J	1.8 J‡	1.2 J‡	N/A	1.0 J‡	0.82 J‡	N/A	N/A	1.4 J‡	1.4 J‡	3.1 J

stances  
 nt to parts per trillion (ppt)  
 orted as less than the Reporting Limit (RL).  
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 , Inc. (\*)  
 o quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)  
 ombined concentration includes one or more result that is not detected greater  
 concentration could not be calculated because PFOS and PFOA were not  
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Sample Name	Units	PW-202 (cont'd)						PW-203					
		3/7/2019	6/7/2019	9/25/2018	3/8/2019	6/8/2019	10/14/2019	9/1/2020 DUP	9/1/2020	12/31/2020	3/23/2021	6/21/2021	8/26/2021
	ng/L	17	17	<2.0	<2.0	<2.0	<2.0	0.81 J	0.95 J	<1.9	0.90 J	<2.0	0.80 J
	ng/L			--	--	--	<2.0	0.48 J	0.67 J	<1.9	<1.7	<2.0	<1.9
	ng/L	2.0	3.2	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	<1.7	<2.0	<1.9
	ng/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	0.50 J	<2.0	<1.9
	ng/L	2.4	2.9	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	<1.7	<2.0	<1.9
	ng/L	--	--	--	--	--	<2.0	<1.9	<1.9	<1.9	<1.7	<2.0	<1.9
	ng/L	--	--	--	--	--	<2.0	<1.9	<1.9	<1.9	<1.7	<2.0	<1.9
	ng/L	--	--	--	--	--	<2.0	<1.9	<1.9	<1.9	<1.7	<2.0	<1.9
	ng/L	--	--	--	--	--	<2.0	<1.9	<1.9	<1.9	<1.7	<2.0	<1.9
etic acid (N-MeFOSAA)	ng/L	--	--	--	--	--	<2.0	<1.9	<1.9	<1.9	<4.3	<5.1	<4.7
c acid (N-EtFOSAA)	ng/L	--	--	--	--	--	<2.0	<1.9	<1.9	<1.9	<4.3	<5.1	<4.7
sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	--	--	<2.0	<1.9	<1.9	<1.9	<1.7	<2.0	<1.9
sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	--	--	<2.0	<1.9	<1.9	<1.9	<1.7	<2.0	<1.9
NA)	ng/L	--	--	--	--	--	<2.0	<1.9	<1.9	<1.9	<1.7	<2.0	<1.9
FPO-DA)	ng/L	--	--	--	--	--	<2.0	<1.9	<1.9	<1.9	<3.4	<4.1	<3.8
	ng/L	32	38	<2.0	<2.0	<2.0	<2.0	<1.9	0.70 J	<1.9	1.8	<2.0	<1.9
	ng/L	3.0	4.2	<2.0	<2.0	<2.0	<2.0	<1.9	0.50 J	<1.9	<1.7	<2.0	<1.9
	ng/L	35	42	N/A	N/A	N/A	N/A	N/A	1.2 J	N/A	1.8 ‡	N/A	N/A

stances  
 nt to parts per trillion (ppt)  
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 ds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.  
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 e preparatory batch as a blank detection for the associated analyte. Flag  
 , Inc. (\*)  
 o quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)  
 ombined concentration includes one or more result that is not detected greater  
 concentration could not be calculated because PFOS and PFOA were not  
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Sample Name	PW-205.1 (cont'd)	PW-206	PW-207	PW-208	PW-208.1	PW-209	PW-209	PW-209	PW-209	PW-209	PW-209	PW-209	PW-209
Units	2/8/2022	4/27/2022	9/28/2018	6/7/2019	6/7/2019	3/23/2021	6/21/2021	9/26/2018	3/7/2019	6/7/2019	9/26/2018	9/26/2018	9/26/2018
	ng/L	1.6 J	1.3 J	<2.0	<2.0	2.5	0.52 J	11	26	35	24	30	32
	ng/L	<1.9	<1.9	--	--	--	2.3	4.0	--	--	--	--	--
	ng/L	<1.9	<1.9	<2.0	<2.0	<2.0	<1.8	1.7 J	3.0	5.0	3.8	3.1	3.0
	ng/L	<1.9	<1.9	<2.0	<2.0	<2.0	<1.8	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	ng/L	<1.9	0.26 J	<2.0	<2.0	<2.0	0.33 JH*	0.74 J	2.2	2.7	1.6 J	2.5	2.7
	ng/L	<1.9	0.32 J	--	--	--	<1.8	<2.0	--	--	--	--	--
	ng/L	<1.9	<1.9	--	--	--	<1.8	<2.0	--	--	--	--	--
	ng/L	<1.9	<1.9	--	--	--	<1.8	<2.0	--	--	--	--	--
	ng/L	<1.9	<1.9	--	--	--	<1.8	<2.0	--	--	--	--	--
	ng/L	<1.9	<1.9	--	--	--	<1.8	<2.0	--	--	--	--	--
actic acid (N-MeFOSAA)	ng/L	<4.7	<4.7	--	--	--	<4.6	<5.0	--	--	--	--	--
ic acid (N-EtFOSAA)	ng/L	4.1 J	<4.7	--	--	--	<4.6	<5.0	--	--	--	--	--
sulfonic acid (9Cl-PF3ONS)	ng/L	<1.9	<1.9	--	--	--	<1.8	<2.0	--	--	--	--	--
sulfonic acid (11Cl-PF3OUdS)	ng/L	<1.9	<1.9	--	--	--	<1.8	<2.0	--	--	--	--	--
(NA)	ng/L	<1.9	<1.9	--	--	--	<1.8	<2.0	--	--	--	--	--
FPO-DA)	ng/L	<3.8	<3.8	--	--	--	<3.7	<4.0	--	--	--	--	--
	ng/L	1.5 J	2.1	<2.0	<2.0	8.4	1.6 J	67	<b>100</b>	<b>120</b>	<b>120</b>	<b>92</b>	<b>95</b>
	ng/L	<1.9	<1.9	<2.0	1.0 J	0.80 J	<1.8	2.6	3.3	2.7	2.5	2.6	2.8
	ng/L	1.5 J‡	2.1 ‡	N/A	1.0 J‡	9.2 J	1.6 J‡	<b>70</b>	<b>103</b>	<b>123</b>	<b>123</b>	<b>95</b>	<b>98</b>

stances

nt to parts per trillion (ppt)

orted as less than the Reporting Limit (RL).

ds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.

ected greater than the method detection limit (MDL) and less than the reporting laboratory.

preparatory batch as a blank detection for the associated analyte. Flag

, Inc. (\*)

o quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

ombined concentration includes one or more result that is not detected greater

concentration could not be calculated because PFOS and PFOA were not

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Sample Name	Units	PW-211										9/26/2018	10/14/2018
		9/26/2018	10/13/2019	8/31/2020	12/30/2020	3/24/2021	6/21/2021	8/23/2021	10/26/2021	2/7/2022	4/27/2022		
	ng/L	1.1 J	<1.9	<1.9	<1.9	<1.8	0.76 J	0.83 J	<2.0	0.68 J	<1.8	<2.0	<1.9
	ng/L	--	0.83 J	<1.9	<1.9	<1.8	<2.0	<1.9	<2.0	<1.9	<1.8	--	<1.9
	ng/L	3.3	0.51 J	<1.9	<1.9	<1.8	<2.0	<1.9	<2.0	<1.9	<1.8	<2.0	<1.9
	ng/L	<2.0	<1.9	<1.9	<1.9	<1.8	<2.0	<1.9	<2.0	<1.9	<1.8	<2.0	<1.9
	ng/L	<2.0	1.4 J	<1.9	<1.9	<1.8	<2.0	0.45 J	0.51 J	1.2 J	<1.8	<2.0	<1.9
	ng/L	--	<1.9	<1.9	<1.9	<1.8	<2.0	<1.9	<2.0	<1.9	<1.8	--	<1.9
	ng/L	--	<1.9	<1.9	<1.9	<1.8	<2.0	<1.9	<2.0	<1.9	<1.8	--	<1.9
	ng/L	--	<1.9	<1.9	<1.9	<1.8	<2.0	<1.9	<2.0	<1.9	<1.8	--	<1.9
	ng/L	--	<1.9	<1.9	<1.9	<1.8	<2.0	<1.9	<2.0	<1.9	<1.8	--	<1.9
	ng/L	--	<1.9	<1.9	<1.9	<1.8	<2.0	<1.9	<2.0	<1.9	<1.8	--	<1.9
etic acid (N-MeFOSAA)	ng/L	--	3.7	<1.9	1.9	<4.5	<5.0	<4.8	2.2 J	<4.8	<4.6	--	<1.9
c acid (N-EtFOSAA)	ng/L	--	<1.9	<1.9	<1.9	<4.5	<5.0	<4.8	<5.0	<4.8	<4.6	--	<1.9
sulfonic acid (9Cl-PF3ONS)	ng/L	--	<1.9	<1.9	<1.9	<1.8	<2.0	<1.9	<2.0	<1.9	<1.8	--	<1.9
sulfonic acid (11Cl-PF3OUdS)	ng/L	--	<1.9	<1.9	<1.9	<1.8	<2.0	<1.9	<2.0	<1.9	<1.8	--	<1.9
NA)	ng/L	--	<1.9	<1.9	<1.9	<1.8	<2.0	<1.9	<2.0	<1.9	<1.8	--	<1.9
FPO-DA)	ng/L	--	<1.9	<1.9	<1.9	<3.6	<4.0	<3.8	<4.0	<3.9	<3.7	--	<1.9
	ng/L	9.1	1.0 J	0.65 J	0.60 J	<1.8	<2.0	<1.9	0.74 J	0.78 JH*	0.55 J	<2.0	<1.9
	ng/L	15	1.0 J	<1.9	<1.9	<1.8	<2.0	<1.9	<2.0	<1.9	<1.8	<2.0	<1.9
	ng/L	24	2.0 J	0.65 J‡	0.60 J‡	N/A	N/A	N/A	0.74 J‡	0.78 JH*‡	0.55 J‡	N/A	N/A

stances  
 nt to parts per trillion (ppt)  
 orted as less than the Reporting Limit (RL).  
 ds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.  
 cted greater than the method detection limit (MDL) and less than the reporting  
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 , Inc. (\*)  
 o quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)  
 ombined concentration includes one or more result that is not detected greater  
 concentration could not be calculated because PFOS and PFOA were not  
 .

Sample Name		PW-213				PW-214	PW-216	PW-218		PW-219			
	Units	11/1/2018	3/7/2019	6/9/2019	9/2/2020	9/27/2018	9/27/2018	11/1/2018	12/30/2020	9/27/2018	9/27/2018	10/14/2019	8/31/2020
	ng/L	24	24	20	17	0.88 J	<2.0	<2.0	<1.9	<2.0	<2.0	<1.9	<1.9
	ng/L	--	--	--	6.7	--	--	--	<1.9	--	--	0.74 J	<1.9
	ng/L	2.2	2.5	2.1	2.5	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	0.49 J	<1.9
	ng/L	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<1.9	<1.9
	ng/L	3.2	3.1	2.2	1.6 J	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	1.2 J	<1.9
	ng/L	--	--	--	<1.9	--	--	--	<1.9	--	--	<1.9	<1.9
	ng/L	--	--	--	<1.9	--	--	--	<1.9	--	--	<1.9	<1.9
	ng/L	--	--	--	<1.9	--	--	--	<1.9	--	--	<1.9	<1.9
	ng/L	--	--	--	<1.9	--	--	--	<1.9	--	--	<1.9	<1.9
etic acid (N-MeFOSAA)	ng/L	--	--	--	<1.9	--	--	--	<1.9	--	--	<1.9	<1.9
c acid (N-EtFOSAA)	ng/L	--	--	--	<1.9	--	--	--	<1.9	--	--	<1.9	<1.9
sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	<1.9	--	--	--	<1.9	--	--	<1.9	<1.9
sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	<1.9	--	--	--	<1.9	--	--	<1.9	<1.9
NA)	ng/L	--	--	--	<1.9	--	--	--	<1.9	--	--	<1.9	<1.9
FPO-DA)	ng/L	--	--	--	<1.9	--	--	--	<1.9	--	--	<1.9	<1.9
	ng/L	51	53	44	61	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<1.9	<1.9
	ng/L	2.3	2.2	<2.2 B*	1.4 J	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	0.84 J	<1.9
	ng/L	53	55	44 B*†	62 J	N/A	N/A	N/A	N/A	N/A	N/A	0.84 J‡	N/A

stances  
 nt to parts per trillion (ppt)  
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 , Inc. (\*)  
 o quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)  
 ombined concentration includes one or more result that is not detected greater  
 concentration could not be calculated because PFOS and PFOA were not  
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Sample Name	Units	PW-221											
		11/1/2018	6/9/2019	10/12/2019	9/2/2020	12/30/2020 DUP	12/30/2020	3/24/2021	6/22/2021 DUP	6/22/2021	8/24/2021	10/26/2021	2/7/2022
	ng/L	<2.0	<2.0	2.1	0.86 J	1.3 J	1.2 J	0.90 J	0.60 J	0.59 J	<1.8	<1.9	<2.0
	ng/L	--	--	0.87 J	<2.0	<1.9	<2.0	0.52 J	<2.0	<1.9	<1.8	<1.9	<2.0
	ng/L	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	<1.8	<1.9	<2.0
	ng/L	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	<1.8	<1.9	<2.0
	ng/L	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	<1.8	<1.9	<2.0
	ng/L	--	--	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	<1.8	<1.9	<2.0
	ng/L	--	--	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	<1.8	<1.9	<2.0
	ng/L	--	--	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	<1.8	<1.9	<2.0
	ng/L	--	--	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	<1.8	<1.9	<2.0
etic acid (N-MeFOSAA)	ng/L	--	--	<1.9	<2.0	<1.9	<2.0	<4.5	<5.0	<4.8	<4.6	<4.9	<5.0
c acid (N-EtFOSAA)	ng/L	--	--	<1.9	<2.0	<1.9	<2.0	<4.5	<5.0	<4.8	<4.6	<4.9	<5.0
sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	<1.8	<1.9	<2.0
sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	<1.8	<1.9	<2.0
NA)	ng/L	--	--	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	<1.8	<1.9	<2.0
FPO-DA)	ng/L	--	--	<1.9	<2.0	<1.9	<2.0	<3.6	<4.0	<3.9	<3.7	<3.9	<4.0
	ng/L	<2.0	<2.0	2.4	1.5 J	1.7 J	1.6 J	2.1	0.97 J	0.98 J	1.0 J	<1.9	0.61 J
	ng/L	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	<1.8	<1.9	<2.0
	ng/L	N/A	N/A	2.4 ‡	1.5 J‡	1.7 J‡	1.6 J‡	2.1 ‡	0.97 J‡	0.98 J‡	1.0 J‡	N/A	0.61 J‡

stances  
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 o quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)  
 ombined concentration includes one or more result that is not detected greater  
 concentration could not be calculated because PFOS and PFOA were not  
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Sample Name		PW-230			PW-231	PW-232	PW-233	PW-234	PW-235		PW-236		PW-237
	Units	10/31/2018	9/1/2020	8/26/2021	10/31/2018	10/31/2018	10/31/2018	10/31/2018	11/1/2018	12/29/2020	10/31/2018 DUP	10/31/2018	11/1/2018
	ng/L	1.2 J	0.71 J	1.8 J	2.6	<2.0	<2.0	<2.0	<2.0	<1.9	0.96 J	1.0 J	<2.0
	ng/L	--	<1.8	<1.9	--	--	--	--	--	<1.9	--	--	--
	ng/L	<2.0	<1.8	<1.9	0.96 J	<2.0	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0
	ng/L	<2.0	<1.8	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0
	ng/L	<2.0	<1.8	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0
	ng/L	--	<1.8	<1.9	--	--	--	--	--	<1.9	--	--	--
	ng/L	--	<1.8	<1.9	--	--	--	--	--	<1.9	--	--	--
	ng/L	--	<1.8	<1.9	--	--	--	--	--	<1.9	--	--	--
	ng/L	--	<1.8	<1.9	--	--	--	--	--	<1.9	--	--	--
etic acid (N-MeFOSAA)	ng/L	--	<1.8	<4.8	--	--	--	--	--	<1.9	--	--	--
c acid (N-EtFOSAA)	ng/L	--	<1.8	<4.8	--	--	--	--	--	<1.9	--	--	--
sulfonic acid (9Cl-PF3ONS)	ng/L	--	<1.8	<1.9	--	--	--	--	--	<1.9	--	--	--
sulfonic acid (11Cl-PF3OUdS)	ng/L	--	<1.8	<1.9	--	--	--	--	--	<1.9	--	--	--
NA)	ng/L	--	<1.8	<1.9	--	--	--	--	--	<1.9	--	--	--
FPO-DA)	ng/L	--	<1.8	<3.8	--	--	--	--	--	<1.9	--	--	--
	ng/L	<2.0	0.68 J	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0
	ng/L	1.1 J	1.0 J	1.1 J	1.1 J	<2.0	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0
	ng/L	1.1 J‡	1.7 J	3.1 J	1.1 J‡	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

stances  
 nt to parts per trillion (ppt)  
 orted as less than the Reporting Limit (RL).  
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Sample Name	Units	PW-240			PW-241		PW-247	PW-248	PW-249		PW-255	PW-275	
		11/1/2018	9/1/2020	8/24/2021	11/1/2018 DUP	11/1/2018	11/2/2018	11/2/2018	11/2/2018 DUP	11/2/2018	10/31/2018	12/9/2018 DUP	12/9/2018
	ng/L	3.3	2.0	1.7 J	5.8	6.1	2.7	6.3	1.5 J	1.4 J	<2.0	<2.0	<2.0
	ng/L	--	<1.9	<2.0	--	--	--	--	--	--	--	--	--
	ng/L	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	ng/L	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	ng/L	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	ng/L	--	<1.9	<2.0	--	--	--	--	--	--	--	--	--
	ng/L	--	<1.9	<2.0	--	--	--	--	--	--	--	--	--
	ng/L	--	<1.9	<2.0	--	--	--	--	--	--	--	--	--
	ng/L	--	<1.9	<2.0	--	--	--	--	--	--	--	--	--
	ng/L	--	<1.9	<2.0	--	--	--	--	--	--	--	--	--
etic acid (N-MeFOSAA)	ng/L	--	<1.9	<5.0	--	--	--	--	--	--	--	--	--
c acid (N-EtFOSAA)	ng/L	--	<1.9	<5.0	--	--	--	--	--	--	--	--	--
sulfonic acid (9Cl-PF3ONS)	ng/L	--	<1.9	<2.0	--	--	--	--	--	--	--	--	--
sulfonic acid (11Cl-PF3OUdS)	ng/L	--	<1.9	<2.0	--	--	--	--	--	--	--	--	--
NA)	ng/L	--	<1.9	<2.0	--	--	--	--	--	--	--	--	--
FPO-DA)	ng/L	--	<1.9	<4.0	--	--	--	--	--	--	--	--	--
	ng/L	<2.0	1.8 J	<2.0	2.9	2.7	<2.0	1.8 J	1.4 J	1.3 J	<2.0	<2.0	<2.0
	ng/L	<2.0	<1.9	<2.0	0.98 J	0.89 J	1.1 J	0.97 J	<2.0	0.84 J	<2.0	<2.0	<2.0
	ng/L	N/A	1.8 J‡	N/A	3.9 J	3.6 J	1.1 J‡	2.8 J	1.4 J‡	2.1 J	N/A	N/A	N/A

stances  
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 orted as less than the Reporting Limit (RL).  
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Sample Name	Units	PW-401											
		9/25/2018	10/31/2018	3/8/2019	6/9/2019	10/11/2019	9/1/2020 DUP	9/1/2020	12/29/2020 DUP	12/29/2020	3/23/2021 DUP	3/23/2021	6/23/2021 DUP
	ng/L	18	20	20	15	16	9.9	9.6	6.9	6.6	6.5	7.7	1.8 J
	ng/L	--	--	--	--	5.4	4.1	4.4	2.8	2.6	3.5	4.4	1.1 J
	ng/L	1.6 J	1.7 J	2.0	1.7 J	1.8 J	1.2 J	1.3 J	1.1 J	1.0 J	1.4 J	1.5 J	0.32 J
	ng/L	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	<2.0	<2.0	<1.9	<1.8	<2.0
	ng/L	2.4	2.3	1.8 J	1.2 J	1.3 J	0.90 J	0.89 J	<2.0	<2.0	0.45 J	0.74 J	<2.0
	ng/L	--	--	--	--	<1.9	<1.9	<1.9	<2.0	<2.0	<1.9	<1.8	<2.0
	ng/L	--	--	--	--	<1.9	<1.9	<1.9	<2.0	<2.0	<1.9	<1.8	<2.0
	ng/L	--	--	--	--	<1.9	<1.9	<1.9	<2.0	<2.0	<1.9	<1.8	<2.0
	ng/L	--	--	--	--	<1.9	<1.9	<1.9	<2.0	<2.0	<1.9	<1.8	<2.0
etic acid (N-MeFOSAA)	ng/L	--	--	--	--	<1.9	<1.9	<1.9	<2.0	<2.0	<4.7	<4.5	<4.9
c acid (N-EtFOSAA)	ng/L	--	--	--	--	<1.9	<1.9	<1.9	<2.0	<2.0	<4.7	<4.5	<4.9
sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	--	<1.9	<1.9	<1.9	<2.0	<2.0	<1.9	<1.8	<2.0
sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	--	<1.9	<1.9	<1.9	<2.0	<2.0	<1.9	<1.8	<2.0
NA)	ng/L	--	--	--	--	<1.9	<1.9	<1.9	<2.0	<2.0	<1.9	<1.8	<2.0
FPO-DA)	ng/L	--	--	--	--	<1.9	<1.9	<1.9	<2.0	<2.0	<3.7	<3.6	<3.9
	ng/L	40	36	31	43	45	38	38	30	28	29	30	13
	ng/L	1.4 J	1.6 J	<2.0 B*	<2.0 B*	1.4 J	0.68 J	0.71 J	0.51 J	<2.0	<1.9	1.0 J	<2.0
	ng/L	41 J	38 J	31 B*‡	43 B*‡	46 J	39 J	39 J	31 J	28 ‡	29 ‡	31 J	13 ‡

stances  
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 concentration could not be calculated because PFOS and PFOA were not  
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Sample Name		PW-401 (cont'd)				PW-402			PW-403				
	Units	8/23/2021	10/26/2021	2/7/2022	4/27/2022	9/25/2018	3/7/2019	6/8/2019	9/25/2018	6/8/2019 DUP	6/8/2019	9/25/2018	12/8/2018
	ng/L	3.1 J*	5.3	1.1 J	3.7	36	30	22	41	30	30	44	27
	ng/L	1.5 J	2.3	<1.9	2.6	--	--	--	--	--	--	--	<9.3 B*
	ng/L	<1.9	1.2 J	<1.9	1.4 J	3.3	4.4	2.9	3.4	2.8	3.1	4.1	4.2 J
	ng/L	<1.9	<1.9	<1.9	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<3.8
	ng/L	<1.9	0.37 J	<1.9	0.37 J	3.7	2.2	1.7 J	5.7	3.1	3.2	3.8	2.0 J
	ng/L	<1.9	<1.9	<1.9	<1.9	--	--	--	--	--	--	--	<3.8
	ng/L	<1.9	<1.9	<1.9	<1.9	--	--	--	--	--	--	--	<3.8
	ng/L	<1.9	<1.9	<1.9	<1.9	--	--	--	--	--	--	--	<3.8
	ng/L	<1.9	<1.9	<1.9	<1.9	--	--	--	--	--	--	--	<3.8
etic acid (N-MeFOSAA)	ng/L	<4.8	<4.7	<4.7	<4.6	--	--	--	--	--	--	--	<15
c acid (N-EtFOSAA)	ng/L	<4.8	<4.7	<4.7	<4.6	--	--	--	--	--	--	--	<15
sulfonic acid (9Cl-PF3ONS)	ng/L	<1.9	<1.9	<1.9	<1.9	--	--	--	--	--	--	--	--
sulfonic acid (11Cl-PF3OUdS)	ng/L	<1.9	<1.9	<1.9	<1.9	--	--	--	--	--	--	--	--
NA)	ng/L	<1.9	<1.9	<1.9	<1.9	--	--	--	--	--	--	--	--
FPO-DA)	ng/L	<3.8	<3.8	<3.8	<3.7	--	--	--	--	--	--	--	--
	ng/L	22 J*	17	15	18	72	100	92	83	67	65	86	106
	ng/L	<1.9	<1.9	<1.9	<1.9	3.4	<2.2 B*	1.5 J	3.3	<2.9 B*	2.6	3.9	<17 B*
	ng/L	22 J*‡	17 ‡	15 ‡	18 ‡	75	100 B*‡	94 J	86	67 B*‡	68	90	106 B*‡

stances  
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Sample Name	Units	PW-406					PW-408				PW-413	PW-414	
		9/25/2018	12/7/2018	3/7/2019 DUP	3/7/2019	6/8/2019	9/26/2018	12/8/2018	3/7/2019	6/7/2019	9/27/2018	6/8/2019	9/1/2020
	ng/L	36	24	28	30	24	30	21	22	28	<2.0	2.1	0.74 J
	ng/L	--	12 JH*	--	--	--	--	8.7	--	--	--	--	<1.9
	ng/L	5.2	5.4 J	4.3	4.8	3.1	4.8	3.2 J	3.9	3.0	<2.0	<2.0	<1.9
	ng/L	<2.0	<3.8	<2.0	<2.0	<2.0	<2.0	<3.8	<2.0	<2.0	<2.0	<2.0	<1.9
	ng/L	2.6	2.0 J	2.2	2.3	2.7	2.1	<3.8	2.0	2.4	<2.0	<2.0	<1.9
	ng/L	--	<3.8	--	--	--	--	<3.8	--	--	--	--	<1.9
	ng/L	--	<3.8	--	--	--	--	<3.8	--	--	--	--	<1.9
	ng/L	--	<3.8	--	--	--	--	<3.8	--	--	--	--	<1.9
	ng/L	--	<3.8	--	--	--	--	<3.8	--	--	--	--	<1.9
	ng/L	--	<3.8	--	--	--	--	<3.8	--	--	--	--	<1.9
etic acid (N-MeFOSAA)	ng/L	--	<15	--	--	--	--	<15	--	--	--	--	<1.9
c acid (N-EtFOSAA)	ng/L	--	<15	--	--	--	--	<15	--	--	--	--	<1.9
sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	--	--	--	--	--	--	--	--	<1.9
sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	--	--	--	--	--	--	--	--	<1.9
NA)	ng/L	--	--	--	--	--	--	--	--	--	--	--	<1.9
FPO-DA)	ng/L	--	--	--	--	--	--	--	--	--	--	--	<1.9
	ng/L	<b>150</b>	<b>113</b>	<b>94</b>	<b>92</b>	<b>74</b>	<b>130</b>	<b>115</b>	<b>97</b>	<b>88</b>	<2.0	2.3	1.2 J
	ng/L	3.3	<13 B*	5.6 J*	8.9 J*	<2.1 B*	2.5	2.6 J	2.5	2.7	<2.0	<2.0	<1.9
	ng/L	<b>153</b>	<b>113 B*‡</b>	<b>100 J*</b>	<b>101 J*</b>	<b>74 B*‡</b>	<b>133</b>	<b>118 J</b>	<b>100</b>	<b>91</b>	N/A	2.3 ‡	1.2 J‡

stances  
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Sample Name		PW-418				PW-419				PW-430		PW-431	PW-432
	Units	9/27/2018	3/8/2019	6/9/2019	6/9/2019	6/8/2019	9/2/2020	6/22/2021	8/25/2021	10/31/2018 DUP	10/31/2018	11/2/2018	10/31/2018
	ng/L	40	30	22	22	7.7	1.9	0.93 J	<18	<2.0	<2.0	5.4	2.5
	ng/L	--	--	--	--	--	0.54 J	<2.0	<18	--	--	--	--
	ng/L	4.1	3.0	2.0	2.0	0.81 J	<1.9	<2.0	<18	<2.0	<2.0	<2.0	<2.0
	ng/L	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<2.0	<18	<2.0	<2.0	<2.0	<2.0
	ng/L	3.9	2.6	2.2	2.1	<2.0	<1.9	<2.0	<18	<2.0	<2.0	<2.0	<2.0
	ng/L	--	--	--	--	--	<1.9	<2.0	<18	--	--	--	--
	ng/L	--	--	--	--	--	<1.9	<2.0	<18	--	--	--	--
	ng/L	--	--	--	--	--	<1.9	<2.0	<18	--	--	--	--
	ng/L	--	--	--	--	--	<1.9	<2.0	<18	--	--	--	--
etic acid (N-MeFOSAA)	ng/L	--	--	--	--	--	<1.9	<5.0	<46	--	--	--	--
c acid (N-EtFOSAA)	ng/L	--	--	--	--	--	<1.9	<5.0	<46	--	--	--	--
sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	--	--	<1.9	<2.0	<18	--	--	--	--
sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	--	--	<1.9	<2.0	<18	--	--	--	--
NA)	ng/L	--	--	--	--	--	<1.9	<2.0	<18	--	--	--	--
FPO-DA)	ng/L	--	--	--	--	--	<1.9	<4.0	<37	--	--	--	--
	ng/L	<b>74</b>	<b>89</b>	63	66	14	3.4	1.5 J	<18	<2.0	<2.0	6.1	2.0
	ng/L	3.4	<3.1 B*	<2.0 B*	<2.0 B*	<2.0	<1.9	<2.0	<18	<2.0	<2.0	<2.0	<2.0
	ng/L	<b>77</b>	<b>89 B*‡</b>	63 B*‡	66 B*‡	14 ‡	3.4 ‡	1.5 J‡	N/A	N/A	N/A	6.1 ‡	2.0 ‡

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Sample Name	PW-436	PW-438		PW-440	PW-441	PW-442	PW-460	PW-461	PW-462		PW-463	PW-464	PW-465	
Units	10/31/2018	8/31/2020	8/23/2021	11/1/2018	6/7/2019	12/7/2018	11/2/2018	11/2/2018	6/7/2019	9/2/2020	6/8/2019	10/13/2019	3/25/2020 DUP	
	<2.0	1.9	2.4	<2.0	3.9	1.1 J	1.7 J	1.4 J	18	13	29	2.1	18 J*	
	--	0.52 J	<1.9	--	--	--	--	--	--	4.9	--	0.51 J	9.7 J*	
	<2.0	<1.9	<1.9	<2.0	<2.0	<2.0	<2.0	1.6 J	2.1	2.0	3.0	<2.0	5.1 J*	
	<2.0	<1.9	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.8	<2.0	<2.0	<1.8	
	<2.0	<1.9	1.0 J	<2.0	<2.0	<2.0	1.4 J	<2.0	1.6 J	0.74 J	2.6	<2.0	0.93 J*	
	--	<1.9	<1.9	--	--	--	--	--	--	<1.8	--	<2.0	<1.8	
	--	<1.9	<1.9	--	--	--	--	--	--	<1.8	--	<2.0	<1.8	
	--	<1.9	<1.9	--	--	--	--	--	--	<1.8	--	<2.0	<1.8	
	--	<1.9	<1.9	--	--	--	--	--	--	<1.8	--	<2.0	<1.8	
etic acid (N-MeFOSAA)	ng/L	--	<1.9	<4.8	--	--	--	--	--	<1.8	--	<2.0	<4.6	
c acid (N-EtFOSAA)	ng/L	--	<1.9	<4.8	--	--	--	--	--	<1.8	--	<2.0	<4.6	
sulfonic acid (9Cl-PF3ONS)	ng/L	--	<1.9	<1.9	--	--	--	--	--	<1.8	--	<2.0	<1.8	
sulfonic acid (11Cl-PF3OUdS)	ng/L	--	<1.9	<1.9	--	--	--	--	--	<1.8	--	<2.0	<1.8	
NA)	ng/L	--	<1.9	<1.9	--	--	--	--	--	<1.8	--	<2.0	<1.8	
FPO-DA)	ng/L	--	<1.9	<3.9	--	--	--	--	--	<1.8	--	<2.0	<3.7	
	ng/L	<2.0	3.7	3.8	<2.0	1.4 J	<2.0	<2.0	1.3 J	48	68	74	1.6 J	100 J*
	ng/L	<2.0	<1.9	<1.9	<2.0	<2.0	<2.0	<2.0	1.2 J	1.8 J	0.99 J	2.8	<2.0	3.4 J*
	ng/L	N/A	3.7 ‡	3.8 ‡	N/A	1.4 J‡	N/A	N/A	2.5 J	50 J	69 J	77	1.6 J‡	103 J*

stances  
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Sample Name		MW-1-15								
Units		10/10/2019	8/31/2020	12/30/2020	3/24/2021	6/21/2021	8/23/2021	10/26/2021	2/8/2022	4/26/2022
	ng/L	1.1 J	<1.7 B*	<1.8	<1.8	0.61 J	0.69 J	0.76 J	0.64 J	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	1.1 J	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9
	ng/L	<1.8	0.33 J	0.20 J	<1.8	<1.7	<1.8	<1.8	0.23 J	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9
	ng/L	<18	<17	<4.5	<4.4	<4.3	<4.5	<4.6	<4.6	<4.7
	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9
	ng/L	<18	<17	<4.5	<4.4	<4.3	<4.5	<4.6	<4.6	<4.7
	ng/L	<3.7	<3.4	<3.6	<3.5	<3.4	<3.6	<3.7	<3.7	<3.7
	ng/L	<1.8	<1.7	<1.8	<1.8	1.4 J	<1.8	<1.8	<1.9	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9
	ng/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Profins TestAmerica

substances

reported as less than the reporting limit (RL) unless  
 quality-control failures.

not detected greater than the method detection  
 limit (MDL) or the RL. Flag applied by the laboratory.

same preparatory batch as a blank detection for  
 flag applied by Shannon & Wilson, Inc. (\*)

biased high due to quality control failures. Flag  
 applied by Shannon & Wilson, Inc. (\*)

biased low due to quality control failures. Flag  
 applied by Shannon & Wilson, Inc. (\*)

the combined concentration includes one or  
 more detected greater than the MDL.

combined concentration could not be calculated  
 because all components were not detected in the project sample.

Sample Name		MW-1-40									
Units		10/10/2019	8/31/2020 DUP	8/31/2020	12/30/2020	3/24/2021	6/21/2021	8/23/2021	10/26/2021	2/8/2022	4/26/2022
	ng/L	<1.9	<1.7 B*	<1.7 B*	1.1 J	0.68 J	0.68 J	<1.8	<1.8	<1.9	<1.8
	ng/L	<1.9	<1.7	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9	<1.8
	ng/L	<1.9	<1.7	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9	<1.8
	ng/L	<1.9	<1.7	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9	<1.8
	ng/L	<1.9	<1.7	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9	<1.8
	ng/L	<1.9	<1.7	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9	<1.8
	ng/L	<1.9	<1.7	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9	<1.8
	ng/L	<1.9	<1.7	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9	<1.8
	ng/L	<1.9	<1.7	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9	<1.8
	ng/L	<1.9	<1.7	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9	<1.8
	ng/L	<1.9	0.43 J	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9	<1.8
	ng/L	<19	<17	<17	<4.6	<4.3	<4.5	<4.6	<4.5	<4.8	<4.6
	ng/L	<1.9	<1.7	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9	<1.8
	ng/L	<1.9	<1.7	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9	<1.8
	ng/L	<1.9	<1.7	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9	<1.8
	ng/L	<19	<17	<17	<4.6	<4.3	<4.5	<4.6	<4.5	<4.8	<4.6
	ng/L	<3.8	<3.4	<3.4	<3.7	<3.4	<3.6	<3.7	<3.6	<3.9	<3.7
	ng/L	<1.9	<1.7	<1.7	0.56 J*	<1.7	<1.8	<1.8	<1.8	<1.9	<1.8
	ng/L	<1.9	<1.7	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9	<1.8
	ng/L	N/A	N/A	N/A	0.56 J* ‡	N/A	N/A	N/A	N/A	N/A	N/A

Profins TestAmerica

substances

detected as less than the reporting limit (RL) unless quality-control failures.

detected greater than the method detection limit (MDL) or the RL. Flag applied by the laboratory.

same preparatory batch as a blank detection for flag applied by Shannon & Wilson, Inc. (\*)

)

biased high due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

biased low due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

the combined concentration includes one or more substances detected greater than the MDL.

combined concentration could not be calculated because one or more substances were not detected in the project sample.

Sample Name		MW-2-20												
Units		10/11/2019	9/1/2020	12/31/2020	3/24/2021 DUP	3/24/2021	6/21/2021 DUP	6/21/2021	8/23/2021 DUP	8/23/2021	10/26/2021 DUP	10/26/2021	2/9/2022	4/26/2022
	ng/L	3.9	32	64	98	100	120	110	41	41	39	40	52	73
	ng/L	4.6	84	63	30	31	45	48	67	64	90	93	190	20
	ng/L	0.95 J	37	54	24	26	26	27	39	39	44	49	88	21
	ng/L	<1.9	4	4	4	3.8	15	15	9.8	9	6.5	7	4.9	18
	ng/L	<1.9	3	9.5	2.3	2.4	2	2	2.2	2.2	2.7	2.6	6.2	2.3
	ng/L	<1.9	<1.7	0.34 J	<1.7	<1.7	<1.8	0.46 J	0.79 J	<1.8	<1.8	0.72 J	0.65 J	0.53 J
	ng/L	<1.9	<1.7	<1.8	<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9
	ng/L	<1.9	<1.7	<1.8	<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9
	ng/L	<1.9	<1.7	<1.8	<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9
	ng/L	<1.9	<1.7	<1.8	<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9
	ng/L	<19	<17	<4.4	<4.3	<4.2	<4.4	<4.5	<4.6	<4.5	<4.5	<4.5	<4.6	<4.8
	ng/L	<1.9	<1.7	<1.8	<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9
	ng/L	<1.9	<1.7	<1.8	<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9
	ng/L	<1.9	<1.7	<1.8	<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9
	ng/L	<19	<17	<4.4	<4.3	<4.2	<4.4	<4.5	<4.6	<4.5	<4.5	<4.5	<4.6	<4.8
	ng/L	<3.8	<3.4	<3.5	<3.5	<3.4	<3.6	<3.6	<3.7	<3.6	<3.6	<3.6	<3.7	<3.8
	ng/L	3.8	<b>260</b>	<b>250</b>	<b>240</b>	<b>250</b>	<b>450</b>	<b>430</b>	<b>520</b>	<b>520</b>	<b>330</b>	<b>360</b>	<b>260</b>	<b>340</b>
	ng/L	1.5 J	36	67	<b>72</b>	<b>78</b>	32	32	36	35	24	24	30	69
	ng/L	5.3 J‡	<b>296</b>	<b>317</b>	<b>312</b>	<b>328</b>	<b>482</b>	<b>462</b>	<b>556</b>	<b>555</b>	<b>354</b>	<b>384</b>	<b>290</b>	<b>409</b>

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Substances

Reported as less than the reporting limit (RL) unless otherwise noted. J = quality-control failures.

‡ = detected greater than the method detection limit (MDL) but less than the RL. Flag applied by the laboratory.

§ = same preparatory batch as a blank detection for which the reporting limit was applied by Shannon & Wilson, Inc. (\*)

¶ = detected greater than the method detection limit (MDL) but less than the RL. Flag applied by Shannon & Wilson, Inc. (\*)

‡ = biased high due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

§ = biased low due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

¶ = the combined concentration includes one or more substances that were detected greater than the MDL.

‡ = combined concentration could not be calculated because one or more substances were not detected in the project sample.



Sample Name		MW-2-30									
Units		10/11/2019	9/1/2020	12/31/2020	3/24/2021	6/21/2021	8/23/2021	10/26/2021	2/9/2022 DUP	2/9/2022	4/26/2022
	ng/L	1.4 J	<1.7 B*	<1.8	0.54 J	<1.8	<1.8	<1.8	<1.9	0.61 JH*	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.8	0.60 J	<1.8	0.54 J*	<1.9	<1.9	<1.9
	ng/L	<1.8	<1.7	0.70 J	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9	<1.9
	ng/L	<1.8	<1.7	0.48 J	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9	<1.9
	ng/L	1.5 J	1.3 J	1.4 J	0.91 J	1.2 J	1.4 J	1.1 J	0.78 J	0.94 J	0.62 J
	ng/L	<1.8	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9	<1.9
	ng/L	<1.8	0.39 J	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9	<1.9
	ng/L	<18	<17	<4.5	<4.4	<4.4	<4.6	<4.5	<4.9	<4.7	<4.7
	ng/L	<1.8	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9	<1.9
	ng/L	<18	<17	<4.5	<4.4	<4.4	<4.6	<4.5	<4.9	<4.7	<4.7
	ng/L	<3.7	<3.4	<3.6	<3.5	<3.5	<3.7	<3.6	<3.9	<3.8	<3.8
	ng/L	<1.8	<1.7	<1.8	<1.8	<1.8	<1.8	0.51 J	<1.9	<1.9	<1.9
	ng/L	<1.8	<1.7	1.4 J	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9	<1.9
	ng/L	N/A	N/A	1.4 J‡	N/A	N/A	N/A	0.51 J‡	N/A	N/A	N/A

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Substances

Reported as less than the reporting limit (RL) unless otherwise noted. Quality-control failures.

Not detected greater than the method detection limit (MDL) or the RL. Flag applied by the laboratory.

Same preparatory batch as a blank detection for quality control. Flag applied by Shannon & Wilson, Inc. (\*)

Biased high due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Biased low due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

The combined concentration includes one or more substances detected greater than the MDL.

The combined concentration could not be calculated because the substances were not detected in the project sample.

Sample Name		MW-3-15							
Units		10/12/2019	9/1/2020	12/30/2020	3/24/2021	6/21/2021	8/24/2021	10/26/2021	4/27/2022
	ng/L	3.7	4.5	3.6	1.9 J*	1.2 J	1.1 JH*	5.8	1.8 J
	ng/L	<1.8	1.0 J	5.1	0.87 J*	0.62 J	<1.8	0.61 J	0.60 J
	ng/L	<1.8	0.44 J	2.7	<1.7 J*	<1.7	<1.8	<1.9	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.7 J*	<1.7	<1.8	<1.9	<1.9
	ng/L	<1.8	0.57 J	1.2 J	0.24 J*	<1.7	0.23 J	0.45 J*	0.55 J
	ng/L	<1.8	<1.7	<1.8	<1.7 J*	<1.7	<1.8	<1.9	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.7 J*	<1.7	<1.8	<1.9	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.7 J*	<1.7	<1.8	<1.9	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.7 J*	<1.7	<1.8	<1.9	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.7 J*	<1.7	<1.8	<1.9	<1.9
	ng/L	<18	<17	<4.5	<4.3 J*	<4.3	<4.6	<4.6	<4.8
	ng/L	<1.8	<1.7	<1.8	<1.7 J*	<1.7	<1.8	<1.9	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.7 J*	<1.7	<1.8	<1.9	<1.9
	ng/L	<1.8	<1.7	<1.8	<1.7 J*	<1.7	<1.8	<1.9	<1.9
	ng/L	<18	<17	<4.5	<4.3 J*	<4.3	<4.6	<4.6	<4.8
	ng/L	<3.7	<3.5	<3.6	<3.5 J*	<3.5	<3.7	<3.7	<3.8
	ng/L	9.5	6.7	5.1	3.1 J*	2.0	1.8	2.7	2.0
	ng/L	<1.8	<1.7	0.94 J	<1.7 J*	<1.7	<1.8	<1.9	<1.9
	ng/L	9.5	6.7	6.0 J†	3.1 J*	2.0	1.8	2.7	2.0

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substances

detected as less than the reporting limit (RL) unless quality-control failures.

detected greater than the method detection limit (MDL) or the RL. Flag applied by the laboratory.

same preparatory batch as a blank detection for which a flag applied by Shannon & Wilson, Inc. (\*)

)  
biased high due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

biased low due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

the combined concentration includes one or more substances detected greater than the MDL.

combined concentration could not be calculated because one or more substances were not detected in the project sample.

Sample Name		MW-3-40										
Units		10/12/2019 DUP	10/12/2019	9/1/2020	12/30/2020	3/24/2021	6/21/2021	8/24/2021 DUP	8/24/2021	10/26/2021	2/9/2022	4/27/2022
	ng/L	32	31	19	14	17	15	14	13	12	6.8 JL*	12
	ng/L	5.2 J*	5.3	2.9	1.6 J	2.4	2.1	1.4 J	1.4 J	1.8 J	1.3 JL*	3.2
	ng/L	<1.9	1.1 J	0.63 J	0.43 J	<1.7	0.43 J	<1.9	<1.8	<1.9	0.48 JL*	0.56 J
	ng/L	<1.9	<1.9	<1.7	<1.8	<1.7	<1.7	<1.9	<1.8	<1.9	<1.9 J*	<1.9
	ng/L	2.9	3.2	1.9	1.2 J	0.93 J	1.1 J	1.1 J	1.1 J	1.0 J	0.74 JL*	1.5 J
	ng/L	<1.9	<1.9	<1.7	<1.8	<1.7	<1.7	<1.9	<1.8	<1.9	<1.9 J*	<1.9
	ng/L	<1.9	<1.9	<1.7	<1.8	<1.7	<1.7	<1.9	<1.8	<1.9	<1.9 J*	<1.9
	ng/L	<1.9	<1.9	<1.7	<1.8	<1.7	<1.7	<1.9	<1.8	<1.9	<1.9 J*	<1.9
	ng/L	<1.9	<1.9	<1.7	<1.8	<1.7	<1.7	<1.9	<1.8	<1.9	<1.9 J*	<1.9
	ng/L	<1.9	<1.9	<1.7	<1.8	<1.7	<1.7	<1.9	<1.8	<1.9	<1.9 J*	<1.9
	ng/L	<19	<19	<17	<4.5	<4.4	<4.4	<4.6	<4.6	<4.7	<4.8 J*	<4.8
	ng/L	<1.9	<1.9	<1.7	<1.8	<1.7	<1.7	<1.9	<1.8	<1.9	<1.9 J*	<1.9
	ng/L	<1.9	<1.9	<1.7	<1.8	<1.7	<1.7	<1.9	<1.8	<1.9	<1.9 J*	<1.9
	ng/L	<1.9	<1.9	<1.7	<1.8	<1.7	<1.7	<1.9	<1.8	<1.9	<1.9 J*	<1.9
	ng/L	<19	<19	<17	<4.5	<4.4	<4.4	<4.6	<4.6	<4.7	<4.8 J*	<4.8
	ng/L	<3.8	<3.7	<3.4	<3.6	<3.5	<3.5	<3.7	<3.7	<3.7	<3.8 J*	<3.8
	ng/L	8.5 J*	9.0 J*	12	13 J*	13	15	14	14	12	7.1 JL*	15
	ng/L	2.8	2.1	2.2	1.3 J	1.7	1.5 J	1.3 J	1.2 J	1.1 J	<1.9 J*	1.2 J
	ng/L	11 J*	11 J*	14	14 J*‡	15	17 J	15 J‡	15 J‡	13 J‡	7.1 JL*	16 J‡

Profins TestAmerica

substances

ed as less than the reporting limit (RL) unless  
quality-control failures.

detected greater than the method detection  
the RL. Flag applied by the laboratory.

ame preparatory batch as a blank detection for  
ag applied by Shannon & Wilson, Inc. (\*)

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biased high due to quality control failures. Flag  
lson, Inc. (\*)

biased low due to quality control failures. Flag  
lson, Inc. (\*)

he combined concentration includes one or  
ected greater than the MDL.

mbined concentration could not be calculated  
were not detected in the project sample.

Sample Name		MW-4-20							
Units		10/10/2019	9/2/2020	12/31/2020	3/25/2021	6/21/2021	8/24/2021	10/25/2021	4/26/2022
	ng/L	<1.9	<1.7 B*	0.65 J	0.50 J	0.63 J	0.64 JH*	0.55 J	0.91 J
	ng/L	<1.9	<1.7	<1.8	<1.7	<1.7	<1.8	<1.8	<1.9
	ng/L	<1.9	0.28 J	<1.8	<1.7	<1.7	<1.8	<1.8	<1.9
	ng/L	<1.9	<1.7	<1.8	<1.7	<1.7	<1.8	<1.8	<1.9
	ng/L	<1.9	0.32 J	0.46 J*	<1.7	0.19 J	<1.8	<1.8	0.19 J
	ng/L	<1.9	<1.7	<1.8	<1.7	<1.7	<1.8	<1.8	0.31 J
	ng/L	<1.9	<1.7	<1.8	<1.7	<1.7	<1.8	<1.8	<1.9
	ng/L	<1.9	<1.7	<1.8	<1.7	<1.7	<1.8	<1.8	<1.9
	ng/L	<1.9	0.40 J	<1.8	<1.7	<1.7	<1.8	<1.8	<1.9
ic acid (N-MeFOSAA)	ng/L	<19	<17	<4.5	<4.3	<4.4	<4.6	<4.5	<4.8
lflonic acid (9Cl-PF3ONS)	ng/L	<1.9	<1.7	<1.8	<1.7	<1.7	<1.8	<1.8	<1.9
lflonic acid (11Cl-PF3OUdS)	ng/L	<1.9	<1.7	<1.8	<1.7	<1.7	<1.8	<1.8	<1.9
IA)	ng/L	<1.9	<1.7	<1.8	<1.7	<1.7	<1.8	<1.8	<1.9
acid (N-EtFOSAA)	ng/L	<19	<17	<4.5	<4.3	<4.4	<4.6	<4.5	<4.8
PO-DA)	ng/L	<3.8	<3.5	<3.6	<3.5	<3.5	<3.6	<3.6	<3.8
	ng/L	<1.9	<1.7	<1.8	<1.7	<1.7	<1.8	<1.8	<1.9
	ng/L	<1.9	<1.7	<1.8	<1.7	<1.7	<1.8	<1.8	<1.9
	ng/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

rofins TestAmerica

substances

ed as less than the reporting limit (RL) unless  
quality-control failures.

detected greater than the method detection  
the RL. Flag applied by the laboratory.

ame preparatory batch as a blank detection for  
lag applied by Shannon & Wilson, Inc. (\*)

)  
biased high due to quality control failures. Flag  
lson, Inc. (\*)

biased low due to quality control failures. Flag  
lson, Inc. (\*)

he combined concentration includes one or  
ected greater than the MDL.

mbined concentration could not be calculated  
were not detected in the project sample.

Sample Name		MW-5-20									
Units		10/11/2019	9/2/2020	1/1/2021	3/25/2021	6/22/2021	8/24/2021	10/25/2021	2/8/2022 DUP	2/8/2022	4/26/2022
	ng/L	3.1	<1.7 B*	1.3 J	1.4 J	2.8	0.92 J	0.88 J	0.91 J	1.1 J	1.7 J
	ng/L	<1.9	0.76 J	<1.8	0.89 J	2.1	0.68 J	<1.8	<1.9	<1.9	<1.8
	ng/L	<1.9	0.22 J	<1.8	<1.7	0.96 J	<1.8	<1.8	<1.9	<1.9	<1.8
	ng/L	<1.9	<1.7	<1.8	0.65 J	0.51 J	<1.8	<1.8	<1.9	<1.9	<1.8
	ng/L	0.31 J	0.29 J	0.44 J	0.45 J	0.45 J	0.50 J	0.41 J	0.23 J	0.22 J	0.44 J
	ng/L	<1.9	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9	<1.9	<1.8
	ng/L	<1.9	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9	<1.9	<1.8
	ng/L	<1.9	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9	<1.9	<1.8
	ng/L	<1.9	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9	<1.9	<1.8 J*
	ng/L	<1.9	0.41 J	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9	<1.9	<1.8
ic acid (N-MeFOSAA)	ng/L	<19	<17	<4.5	<4.3	<4.6	<4.6	<4.6	<4.8	<4.8	<4.6
lflonic acid (9Cl-PF3ONS)	ng/L	<1.9	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9	<1.9	<1.8
lflonic acid (11Cl-PF3OUdS)	ng/L	<1.9	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9	<1.9	<1.8
IA)	ng/L	<1.9	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9	<1.9	<1.8
acid (N-EtFOSAA)	ng/L	<19	<17	<4.5	<4.3	<4.6	<4.6	<4.6	<4.8	<4.8	<4.6
PO-DA)	ng/L	<3.8	<3.4	<3.6	<3.4	<3.7	<3.7	<3.7	<3.8	<3.8	<3.7
	ng/L	<1.9	2.0	1.7 J	2.7	3.5	2.7	3.6	2.9	2.9	3.4
	ng/L	<1.9	<1.7	1.0 J	0.87 J	2.1	1.3 J	0.81 J	<1.9	<1.9	<1.8
	ng/L	N/A	2.0	3.0 J‡	4.0 J‡	5.6	4.0 J‡	4.4 J‡	2.9	2.9	3.4

Profins TestAmerica

substances

ed as less than the reporting limit (RL) unless quality-control failures.

detected greater than the method detection the RL. Flag applied by the laboratory.

ame preparatory batch as a blank detection for flag applied by Shannon & Wilson, Inc. (\*)

)

biased high due to quality control failures. Flag lson, Inc. (\*)

biased low due to quality control failures. Flag lson, Inc. (\*)

he combined concentration includes one or ected greater than the MDL.

mbined concentration could not be calculated were not detected in the project sample.

Sample Name		MW-6-20											
Units		10/12/2019	9/2/2020 DUP	9/2/2020	1/1/2021 DUP	1/1/2021	3/25/2021	6/22/2021	8/24/2021	10/26/2021	2/9/2022	4/27/2022 DUP	4/27/2022
	ng/L	2.9	<1.8 B*	<1.8 B*	2.6	2.8	1.0 J*	1.1 J	0.69 J	1.1 J	0.90 J*	1.6 J	1.6 J
	ng/L	<1.9	<1.7	<1.7	<1.7	<1.8	<1.8 J*	<1.7	<1.8	<1.8	<1.9 J*	<1.9	<1.9
	ng/L	<1.9	<1.7	<1.7	0.29 J*	<1.8	<1.8 J*	<1.7	<1.8	<1.8	<1.9 J*	0.26 J	0.34 J
	ng/L	<1.9	<1.7	<1.7	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9 J*	<1.9	<1.9
	ng/L	<1.9	0.28 J	0.30 J	0.37 J	0.32 J	0.30 J*	<1.7	<1.8	<1.8	<1.9 J*	0.19 J	<1.9
	ng/L	<1.9	<1.7	<1.7	<1.7	<1.8	<1.8 J*	<1.7	<1.8	<1.8	<1.9 J*	<1.9	<1.9
	ng/L	<1.9	<1.7	<1.7	<1.7	<1.8	<1.8 J*	<1.7	<1.8	<1.8	<1.9 J*	<1.9	<1.9
	ng/L	<1.9	<1.7	<1.7	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9 J*	<1.9	<1.9
	ng/L	<1.9	<1.7	0.34 J	<1.7	<1.8	<1.8 J*	<1.7	<1.8	<1.8	<1.9 J*	<1.9	<1.9
Acetic acid (N-MeFOSAA)	ng/L	<19	<17	<17	<4.3	<4.5	<4.5 J*	<4.3	<4.5	<4.6	<4.7 J*	<4.8	<4.8
Trifluoroacetic acid (9CI-PF3ONS)	ng/L	<1.9	<1.7	<1.7	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9 J*	<1.9	<1.9
Trifluoroacetic acid (11CI-PF3OUdS)	ng/L	<1.9	<1.7	<1.7	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9 J*	<1.9	<1.9
Trifluoroacetic acid (11CI-PF3OUdS)	ng/L	<1.9	<1.7	<1.7	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9 J*	<1.9	<1.9
Trifluoroacetic acid (N-EtFOSAA)	ng/L	<19	<17	<17	<4.3	<4.5	<4.5 J*	<4.3	<4.5	<4.6	<4.7 J*	<4.8	<4.8
Trifluoroacetic acid (PO-DA)	ng/L	<3.8	<3.4	<3.4	<3.5	<3.6	<3.6 J*	<3.4	<3.6	<3.7	<3.8 J*	<3.8	<3.8
	ng/L	<1.9	0.91 J	<1.7	1.3 J*	1.2 J*	1.5 J*	<1.7	<1.8	<1.8	<1.9 J*	1.4 J	0.99 J
	ng/L	<1.9	<1.7	<1.7	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9 J*	<1.9	<1.9
	ng/L	N/A	0.91 J‡	N/A	1.3 J*‡	1.2 J*‡	1.5 J* ‡	N/A	N/A	N/A	N/A	1.4 J‡	0.99 J‡

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substances

detected as less than the reporting limit (RL) unless quality-control failures.

detected greater than the method detection limit (MDL) or the RL. Flag applied by the laboratory.

same preparatory batch as a blank detection for quality control. Flag applied by Shannon & Wilson, Inc. (\*)

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biased high due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

biased low due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

the combined concentration includes one or more substances detected greater than the MDL.

combined concentration could not be calculated because the substances were not detected in the project sample.

Sample Name		MW-7-20								
Units		10/13/2019	9/2/2020	12/30/2020 DUP	12/30/2020	3/25/2021	6/22/2021	8/24/2021	10/25/2021	4/26/2022
	ng/L	1.5 JH*	<1.7 B*	1.1 J	1.0 J	0.98 J	1.0 J	1.0 J	0.67 J	0.74 J
	ng/L	1.1 J	1.2 J	1.2 J	1.2 J	1.3 J	1.2 J	2.9	1.8 J	<1.9
	ng/L	0.56 J	0.84 J	0.89 J	0.91 J	1.0 J	0.96 J	0.75 J	0.61 J	0.54 J
	ng/L	<1.9	<1.7	<1.9	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9
	ng/L	0.35 J	0.45 J	<1.9	0.43 J	<1.7	0.46 J	<1.8	0.21 J	<1.9
	ng/L	<1.9	<1.7	<1.9	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9
	ng/L	<1.9	<1.7	<1.9	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9
	ng/L	<1.9	<1.7	<1.9	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9
	ng/L	<1.9	<1.7	<1.9	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9
	ng/L	<1.9	<1.7	<1.9	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9
	ng/L	<19	<17	<4.8	<4.5	<4.4	<4.5	<4.5	<4.6	<4.7
	ng/L	<1.9	<1.7	<1.9	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9
	ng/L	<1.9	<1.7	<1.9	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9
	ng/L	<1.9	<1.7	<1.9	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9
	ng/L	<19	<17	<4.8	<4.5	<4.4	<4.5	<4.5	<4.6	<4.7
	ng/L	<3.8	<3.5	<3.8	<3.6	<3.5	<3.6	<3.6	<3.7	<3.8
	ng/L	1.3 J	3.9	4.5	4.8	5.0	6.2	13	14	5.7
	ng/L	1.4 J	2.7	1.3 J	1.1 J	2.3	6.7	3.4	2.6	1.2 J
	ng/L	2.7 J‡	6.6	5.8 J‡	5.9 J‡	7.3	13	16	17	6.9 J‡

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substances

reported as less than the reporting limit (RL) unless  
quality-control failures.

not detected greater than the method detection  
limit (MDL). Flag applied by the laboratory.

same preparatory batch as a blank detection for  
this sample. Flag applied by Shannon & Wilson, Inc. (\*)

may be biased high due to quality control failures. Flag  
applied by Shannon & Wilson, Inc. (\*)

may be biased low due to quality control failures. Flag  
applied by Shannon & Wilson, Inc. (\*)

the combined concentration includes one or  
more substances detected greater than the MDL.

the combined concentration could not be calculated  
because one or more substances were not detected in the project sample.

Sample Name		MW-8-20											
Units		10/13/2019	9/1/2020	9/1/2020	1/1/2021	3/24/2021	6/22/2021	8/25/2021	10/25/2021	2/7/2022	2/7/2022	4/26/2022	4/26/2022
	ng/L	<1.9 B*	<1.7 B*	<1.7 B*	0.62 J	0.57 J*	0.49 J	<1.9	<1.8	<1.9	<1.9	0.73 J	0.83 J
	ng/L	<1.9	<1.7	<1.7	<1.7	<1.8 J*	<1.7	<1.9	<1.8	<1.9	<1.9	<1.8	<1.8
	ng/L	<1.9	<1.7	<1.7	<1.7	<1.8 J*	0.23 J	<1.9	<1.8	<1.9	<1.9	<1.8	<1.8
	ng/L	<1.9	<1.7	<1.7	<1.7	<1.8 J*	<1.7	<1.9	<1.8	<1.9	<1.9	<1.8	<1.8
	ng/L	<1.9	<1.7	<1.7	<1.7	<1.8 J*	<1.7	<1.9	<1.8	<1.9	<1.9	<1.8	<1.8
	ng/L	<1.9	<1.7	<1.7	<1.7	<1.8 J*	<1.7	<1.9	<1.8	<1.9	<1.9	<1.8	<1.8
	ng/L	<1.9	<1.7	<1.7	<1.7	<1.8 J*	<1.7	<1.9	<1.8	<1.9	<1.9	<1.8	<1.8
	ng/L	<1.9	<1.7	<1.7	<1.7	<1.8 J*	<1.7	<1.9	<1.8	<1.9	<1.9	<1.8	<1.8
	ng/L	<1.9	<1.7	<1.7	<1.7	<1.8 J*	<1.7	<1.9	<1.8	<1.9	<1.9	<1.8	<1.8
	ng/L	<1.9	0.50 J	<1.7	<1.7	<1.8 J*	<1.7	<1.9	<1.8	<1.9	<1.9	<1.8	<1.8
ic acid (N-MeFOSAA)	ng/L	<19	<17	<17	<4.4	<4.6 J*	<4.2	<4.7	<4.6	<4.6	<4.8	<4.6	<4.6
lflonic acid (9Cl-PF3ONS)	ng/L	<1.9	<1.7	<1.7	<1.7	<1.8 J*	<1.7	<1.9	<1.8	<1.9	<1.9	<1.8	<1.8
lflonic acid (11Cl-PF3OUdS)	ng/L	<1.9	<1.7	<1.7	<1.7	<1.8 J*	<1.7	<1.9	<1.8	<1.9	<1.9	<1.8	<1.8
IA)	ng/L	<1.9	<1.7	<1.7	<1.7	<1.8 J*	<1.7	<1.9	<1.8	<1.9	<1.9	<1.8	<1.8
acid (N-EtFOSAA)	ng/L	<19	<17	<17	<4.4	<4.6 J*	<4.2	<4.7	<4.6	<4.6	<4.8	<4.6	<4.6
PO-DA)	ng/L	<3.9	<3.4	<3.4	<3.5	<3.7 J*	<3.4	<3.7	<3.7	<3.7	<3.9	<3.6	<3.6
	ng/L	0.81 J	<1.7	<1.7	<1.7	<1.8 J*	<1.7	<1.9	2.3	<1.9	<1.9	<1.8	<1.8
	ng/L	<1.9	<1.7	<1.7	<1.7	<1.8 J*	<1.7	<1.9	<1.8	<1.9	<1.9	<1.8	<1.8
	ng/L	0.81 J‡	N/A	N/A	N/A	N/A	N/A	N/A	2.3	N/A	N/A	N/A	N/A

Profins TestAmerica

substances

ed as less than the reporting limit (RL) unless quality-control failures.

detected greater than the method detection the RL. Flag applied by the laboratory.

ame preparatory batch as a blank detection for flag applied by Shannon & Wilson, Inc. (\*)

)

biased high due to quality control failures. Flag lson, Inc. (\*)

biased low due to quality control failures. Flag lson, Inc. (\*)

he combined concentration includes one or ected greater than the MDL.

mbined concentration could not be calculated ere not detected in the project sample.



Sample Name		MW-9-30											
Units		10/13/2019	9/1/2020	12/30/2020	3/24/2021	6/22/2021	6/22/2021	8/25/2021	8/25/2021	10/25/2021	10/25/2021	2/10/2022	4/26/2022
	ng/L	15 B	23	11	15	15	15	9.8	8.6	9.9	10	12 JL*	8.9
	ng/L	5.5	16	4.6	8.9	7	6.7	5.3	5.5	7.5	7.7	6.4 JL*	5.6
	ng/L	2.2	6	2	3	3.2	3.2	1.8	1.9	2.9	2.9	2.8 JL*	2.3
	ng/L	<1.9	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9	<1.8	<1.9 J*	<1.9
	ng/L	1.2 J	1.6 J	0.66 J	1.2 J	0.78 J	0.79 J	0.74 J	0.96 J	0.78 J	0.65 J	0.75 J*	0.57 J
	ng/L	<1.9	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9	<1.8	<1.9 J*	<1.9
	ng/L	<1.9	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9	<1.8	<1.9 J*	<1.9
	ng/L	<1.9	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9	<1.8	<1.9 J*	<1.9
	ng/L	<1.9	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9	<1.8	<1.9 J*	<1.9
	ng/L	<1.9	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9	<1.8	<1.9 J*	<1.9
	ng/L	<19	<17	<4.5	<4.5	<4.4	<4.4	<4.6	<4.7	<4.7	<4.6	<4.8 J*	<4.7
	ng/L	<1.9	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9	<1.8	<1.9 J*	<1.9
	ng/L	<1.9	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9	<1.8	<1.9 J*	<1.9
	ng/L	<1.9	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8	<1.9	<1.9	<1.8	<1.9 J*	<1.9
	ng/L	<19	<17	<4.5	<4.5	<4.4	<4.4	<4.6	<4.7	<4.7	<4.6	<4.8 J*	<4.7
	ng/L	<3.8	<3.4	<3.6	<3.6	<3.5	<3.5	<3.7	<3.7	<3.7	<3.7	<3.8 J*	<3.7
	ng/L	<b>97</b>	<b>88</b>	<b>92</b>	<b>97</b>	<b>84</b>	<b>95</b>	42	43	37	37	45 JL*	67
	ng/L	1.5 J	2.3	1.0 J	1.0 J	0.97 J	1.1 J	0.95 J	1.2 J	0.87 J	0.78 J	1.5 JL*	1.3 J
	ng/L	<b>99 J‡</b>	<b>90</b>	<b>93 J‡</b>	<b>98 J‡</b>	<b>85 J‡</b>	<b>96 J‡</b>	43 J‡	44 J‡	38 J‡	38 J‡	47 JL*‡	68 J‡

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Substances

Reported as less than the reporting limit (RL) unless otherwise noted. Flag applied for quality-control failures.

Reported as detected greater than the method detection limit (MDL) but less than the RL. Flag applied by the laboratory.

Reported as a same preparatory batch as a blank detection for quality control. Flag applied by Shannon & Wilson, Inc. (\*)

Reported as biased high due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Reported as biased low due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Reported as the combined concentration includes one or more substances detected greater than the MDL.

Reported as the combined concentration could not be calculated because one or more substances were not detected in the project sample.

Sample Name		MW-10-20								
Units		10/13/2019	9/1/2020	1/1/2021	3/24/2021	6/22/2021	8/25/2021	10/25/2021	2/8/2022	4/26/2022
	ng/L	12	13	5.4	17 J*	21	19	8.4	11 JL*	8.3
	ng/L	5.6	11	5.3	16 J*	15	15	6.4	8.7 JL*	8.4
	ng/L	2.3	4.5	1.8	4.8	5.6	6.3	2.9	1.9 JL*	3.1
	ng/L	<1.9	0.42 J	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9 J*	<1.9
	ng/L	0.75 J	0.64 J	0.42 J	1.3 J*	0.87 J	1.3 J	0.38 J	0.73 JL*	0.42 J
	ng/L	<1.9	<1.7	<1.8	<1.7 J*	<1.8	<1.8	<1.8	<1.9 J*	<1.9
	ng/L	<1.9	<1.7	<1.8	<1.7 J*	<1.8	<1.8	<1.8	<1.9 J*	<1.9
	ng/L	<1.9	<1.7	<1.8	<1.7 J*	<1.8	<1.8	<1.8	<1.9 J*	<1.9
	ng/L	<1.9	<1.7	<1.8	<1.7 J*	<1.8	<1.8	<1.8	<1.9 J*	<1.9
	ng/L	<1.9	<1.7	<1.8	<1.7 J*	<1.8	<1.8	<1.8	<1.9 J*	<1.9
	ng/L	<19	<17	<4.6	<4.3 J*	<4.4	<4.5	<4.5	<4.6 J*	<4.6
	ng/L	<1.9	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9 J*	<1.9
	ng/L	<1.9	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9 J*	<1.9
	ng/L	<1.9	<1.7	<1.8	<1.7	<1.8	<1.8	<1.8	<1.9 J*	<1.9
	ng/L	<19	<17	<4.6	<4.3 J*	<4.4	<4.5	<4.5	<4.6 J*	<4.6
	ng/L	<3.8	<3.4	<3.7	<3.5 J*	<3.5	<3.6	<3.6	<3.7 J*	<3.7
	ng/L	49	140	39	37 J*	95	91	81	26 JL*	62
	ng/L	1.2 J	2.6	<1.8	1.9	2	2.1	1.1 J	1.6 JL*	1.2 J
	ng/L	50 J‡	143	39	39 J*	97	93	82 J‡	28 JL*J‡	63 J‡

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substances

detected as less than the reporting limit (RL) unless quality-control failures.

detected greater than the method detection limit (MDL) or the RL. Flag applied by the laboratory.

same preparatory batch as a blank detection for quality control. Flag applied by Shannon & Wilson, Inc. (\*)

biased high due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

biased low due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

the combined concentration includes one or more substances detected greater than the MDL.

combined concentration could not be calculated because one or more substances were not detected in the project sample.

Sample Name		MW-11-15												
Units		10/14/2019	10/14/2019	9/2/2020	12/31/2020	3/25/2021	3/25/2021	6/23/2021	6/23/2021	8/27/2021	10/31/2021	2/10/2022	2/10/2022	4/28/2022
	ng/L	12 B	12 B	15	830	20	17	13	13	44	60	52	51	35
	ng/L	18	18	27	180	13	15	18	15	53	16	12	14	13
	ng/L	4.8	4.8	7	19	2.7	3	2.7	3	13	10	8.5	8.7	5.8
	ng/L	0.88 J	1.0 J	1.4 J	2.2	0.60 J	0.62 J	0.88 J	0.85 J	1.3 J	1.3 J	0.65 J	0.81 J	0.76 J
	ng/L	1.3 J	1.2 J	2.2	35	1.4 J	1.2 J	1.0 J	0.97 J	11	4.7	1.4 J	1.5 J	2.3
	ng/L	1.8 J	1.7 J	1.1 J	1.3 J	<1.7	<1.7	0.86 J	0.85 J	1.7 J	<1.8	<1.9	<1.9	<1.9
	ng/L	1.2 J	1.4 J	<1.7	<1.7	<1.7	<1.7	<1.7	<1.8	<1.8	<1.8	<1.9	<1.9	<1.9
	ng/L	0.68 J	0.68 J	<1.7	<1.7	<1.7	<1.7	<1.7	<1.8	<1.8	0.72 J	<1.9	<1.9	<1.9
	ng/L	<1.9	<1.9	<1.7	<1.7	<1.7	<1.7	<1.7	<1.8	<1.8	<1.8	<1.9	<1.9	<1.9
	ng/L	<1.9	<1.9	<1.7	<1.7	<1.7	<1.7	<1.7	<1.8	<1.8	<1.8	<1.9	<1.9	<1.9
	ng/L	<19	<19	<17	<4.3	<4.3	<4.2	<4.3	<4.4	<4.6	<4.5	<4.7	<4.7	<4.7
	ng/L	<1.9	<1.9	<1.7	<1.7	<1.7	<1.7	<1.7	<1.8	<1.8	<1.8	<1.9	<1.9	<1.9
	ng/L	<1.9	<1.9	<1.7	<1.7	<1.7	<1.7	<1.7	<1.8	<1.8	<1.8	<1.9	<1.9	<1.9
	ng/L	<1.9	<1.9	<1.7	<1.7	<1.7	<1.7	<1.7	<1.8	<1.8	<1.8	<1.9	<1.9	<1.9
	ng/L	<19	<19	<17	<4.3	<4.3	<4.2	<4.3	<4.4	<4.6	<4.5	<4.7	<4.7	<4.7
	ng/L	<3.7	<3.7	<3.4	<3.5	<3.4	<3.4	<3.5	<3.5	<3.7	<3.6	<3.8	<3.8	<3.7
	ng/L	38	39	76	6,100	200	210	140	130	59	820	120	130	170
	ng/L	1.8 J	1.9	2.4	92	2.2	2.2	2.0	2.1	5.4	9.8	11	12	5.9
	ng/L	40 J†	41	78	6,192	202	212	142	132	64	830	131	142	176

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Substances

Reported as less than the reporting limit (RL) unless otherwise noted. Quality-control failures.

Not detected greater than the method detection limit (MDL) or the RL. Flag applied by the laboratory.

Sample name preparatory batch as a blank detection for quality control. Flag applied by Shannon & Wilson, Inc. (\*)

Sample name preparatory batch as a blank detection for quality control. Flag applied by Shannon & Wilson, Inc. (\*)

Sample name preparatory batch as a blank detection for quality control. Flag applied by Shannon & Wilson, Inc. (\*)

The combined concentration includes one or more substances detected greater than the MDL.

The combined concentration could not be calculated because one or more substances were not detected in the project sample.

Sample Name		MW-12-10									
Units		10/14/2019	9/2/2020	12/31/2020	12/31/2020	3/25/2021	6/23/2021	8/27/2021	8/27/2021	10/31/2021	10/31/2021
	ng/L	52 B	52	29	31	9.4	14	11	8.2	11	10
	ng/L	17	17	13	13	4.8	5.6	2.8	2.8	2.9	2.4
	ng/L	10	15	15	15	3.8	5.5	3.3	2.9	4.3	4.4
	ng/L	0.83 J	0.97 J	2.5	2.6	0.64 J	0.66 J	0.55 J	0.55 J	0.91 J*	0.58 J*
	ng/L	3.1	1.8	0.71 J	0.68 J	0.52 J	0.61 J	0.50 J	0.21 J	0.23 J	0.35 J*
	ng/L	<1.9	<1.7	0.65 J	0.51 J	<1.8	<1.8	<1.8	<1.8	<1.7	<1.7
	ng/L	<1.9	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.7
	ng/L	<1.9	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.7
	ng/L	<1.9	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.7
	ng/L	<1.9	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.7
	ng/L	<1.9	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.7
	ng/L	<1.9	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.7
	ng/L	<19	<17	<4.6	<4.4	<4.5	<4.5	<4.5	<4.6	<4.4	<4.3
	ng/L	<1.9	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.7
	ng/L	<1.9	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.7
	ng/L	<1.9	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.7
	ng/L	<19	<17	<4.6	<4.4	<4.5	<4.5	<4.5	<4.6	<4.4	<4.3
	ng/L	<3.7	<3.5	<3.7	<3.5	<3.6	<3.6	<3.6	<3.7	<3.5	<3.4
	ng/L	<b>180</b>	<b>210</b>	<b>100</b>	<b>100</b>	36	50	<b>100 J*</b>	36 J*	30	27
	ng/L	8.4	9.8	8.8	9.5	2.9	2.6	1.9	2.0	2.5	2.6
	ng/L	<b>188</b>	<b>220</b>	<b>109</b>	<b>110</b>	39	53	<b>102 J*</b>	2.0	32	30

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Substances

Reported as less than the reporting limit (RL) unless otherwise noted. Flagged as quality-control failures.

Reported as detected greater than the method detection limit (MDL) but less than the RL. Flag applied by the laboratory.

Reported as same preparatory batch as a blank detection for quality control. Flag applied by Shannon & Wilson, Inc. (\*)

Reported as biased high due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Reported as biased low due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Reported as the combined concentration includes one or more substances detected greater than the MDL.

Reported as combined concentration could not be calculated because one or more substances were not detected in the project sample.

		Jun-21	-	-	-	-	-	-	
	Quarterly	Aug-21	1.2 J	2.1	3.7	8.2	3.3	8.1	11
		Oct-21	-	-	-	-	-	-	-
		Feb-22	0.64 J	1.6 J	2.8	6.6	2.0	8.3	10
		Apr-22	1.3 J	2.8	5.6	6.6	3.8	9.3	13
		<b>Trend:</b>	<b>Stable</b>	<b>No Trend</b>	<b>No Trend</b>	<b>Decreasing</b>	<b>Probably Decreasing</b>	<b>Decreasing</b>	<b>Decreasing</b>
PW-010	Quarterly	Aug-18	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Jun-19	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Oct-19	<1.9	<1.9	1.0 J	2.9	<1.9	2.2	2.2 ‡
		Sep-20	<1.9	<1.9	<1.9	0.60 J	<1.9	0.88 J	0.88 J‡
		Dec-20	<1.8	<1.8	<1.8	<1.8	<1.8	0.46 J	0.46 J‡
		Mar-21	<1.8	<1.8	<1.8	<1.8	<1.8	0.79 J	0.79 J‡
		Jun-21	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Aug-21	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Oct-21	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Feb-22	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	N/A
		Apr-22	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		<b>Trend:</b>	N/A	N/A	N/A	N/A	N/A	N/A	
PW-012	Quarterly	Aug-18	1.8 J	0.81 J	—	8.9	0.77 J	7.7	8.5 J
		Mar-19	1.5 J	0.87 J	—	11	<2.0 B*	25	25 B*‡
		Jun-19	1.1 J	<2.0	—	7.0	0.81 J	14	15 J
		Oct-19	0.99 J	0.86 J	2.8	9.3	0.74 J	13	14 J
		Sep-20	0.50 J	<1.9	1.2 J	4.7	<1.9	15	15 ‡
		Jan-21	0.59 J	1.1 J	3.3	8.5	0.47 J	12	12 J
		Mar-21	<1.8	<1.8	0.62 J	1.5 J	<1.8	7.7	7.7 ‡
		Jun-21	0.27 J	<2.0	<2.0	5.2	<2.0	5.6	5.6 ‡
		Aug-21	<1.9	<1.9	<1.9	2.3	<1.9	4.3	4.3 ‡
		Oct-21	<1.9	<1.9	<1.9	2.2	<1.9	4.9	4.9 ‡
		Feb-22	<1.9	<1.9	<1.9	0.76 J	<1.9	1.9	1.9 ‡
Apr-22	<1.7	<1.7	<1.7	0.81 J	<1.7	2.5	2.5 ‡		
		<b>Trend:</b>	<b>No Trend</b>	N/A	N/A	<b>Decreasing</b>	N/A	<b>Decreasing</b>	N/A
PW-032	Annual	Aug-18	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Sep-20	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
Insufficient Data for Trend Analysis									
PW-037	Quarterly	Aug-18	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Mar-19	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Jun-19	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Oct-19	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Sep-20	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Dec-20	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	N/A
		Mar-21	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	N/A
		Jun-21	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	N/A
		Aug-21	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	N/A
		Oct-21	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	N/A
		Feb-22	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	N/A
Apr-22	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	N/A		
		<b>Trend:</b>	N/A	N/A	N/A	N/A	N/A	N/A	
PW-038	Quarterly	Aug-18	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Mar-19	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Jun-19	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Oct-19	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	N/A
		Sep-20	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Dec-20	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Mar-21	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	N/A
		Jun-21	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Aug-21	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Oct-21	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Feb-22	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
Apr-22	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	N/A		
		<b>Trend:</b>	N/A	N/A	N/A	N/A	N/A	N/A	



		Apr-22	0.26 J	<1.9	<1.9	1.3 J	<1.9	2.1	2.1 ‡
			<b>Stable</b>	N/A	N/A	<b>Stable</b>	N/A	<b>Stable</b>	N/A
<i>PW-207</i>	Annual	Jun-19	<2.0	<2.0	—	<2.0	1.0 J	<2.0	1.0 J‡
			Insufficient Data for Trend Analysis						
		Sep-18	<2.0	3.3	—	1.1 J	15	9.1	24
		Oct-19	1.4 J	0.51 J	0.83 J	<1.9	1.0 J	1.0 J	2.0 J
		Aug-20	<1.9	<1.9	<1.9	<1.9	<1.9	0.65 J	0.65 J‡
		Dec-20	<1.9	<1.9	<1.9	<1.9	<1.9	0.60 J	0.60 J‡
		Mar-21	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	N/A
<i>PW-211</i>	Quarterly	Jun-21	<2.0	<2.0	<2.0	0.76 J	<2.0	<2.0	N/A
		Aug-21	0.45 J	<1.9	<1.9	0.83 J	<1.9	<1.9	N/A
		Oct-21	0.51 J	<2.0	<2.0	<2.0	<2.0	0.74 J	0.74 J‡
		Feb-22	1.2 J	<1.9	<1.9	0.68 J	<1.9	0.78 JH*	0.78 JH*‡
		Apr-22	<1.8	<1.8	<1.8	<1.8	<1.8	0.55 J	0.55 J‡
		<b>Trend:</b>	N/A	N/A	N/A	N/A	N/A	<b>No Trend</b>	N/A
		Sep-18	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
<i>PW-212</i>	Annual	Oct-19	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Aug-21	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
			Insufficient Data for Trend Analysis						
<i>PW-218</i>	Annual	Nov-18	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Dec-20	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
			Insufficient Data for Trend Analysis						
		Sep-18	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
<i>PW-219</i>	Annual	Oct-19	1.2 J	0.49 J	0.74 J	<1.9	0.84 J	<1.9	0.84 J‡
		Aug-20	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Aug-21	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		<b>Trend:</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Nov-18	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Jun-19	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Oct-19	<1.9	<1.9	0.87 J	2.1	<1.9	2.4	2.4 ‡
		Sep-20	<2.0	<2.0	<2.0	0.86 J	<2.0	1.5 J	1.5 J‡
		Dec-20	<2.0	<2.0	<2.0	1.3 J	<2.1	1.7 J	1.7 J‡
		Mar-21	<1.8	<1.8	0.52 J	0.90 J	<1.8	2.1	2.1 ‡
<i>PW-221</i>	Quarterly	Jun-21	<2.0	<2.0	<2.0	0.60 J	<2.0	0.97 J	0.97 J‡
		Aug-21	<1.8	<1.8	<1.8	<1.8	<1.8	1.0 J	1.0 J‡
		Oct-21	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Feb-22	<2.0	<2.0	<2.0	<2.0	<2.0	0.61 J	0.61 J‡
		Apr-22	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		<b>Trend:</b>	N/A	N/A	N/A	N/A	N/A	<b>Probably Decreasing</b>	N/A
		Oct-18	<2.0	<2.0	—	1.2 J	1.1 J	<2.0	1.1 J‡
<i>PW-230</i>	Annual	Sep-20	<1.8	<1.8	<1.8	0.71 J	1.0 J	0.68 J	1.7 J
		Aug-21	<1.9	<1.9	<1.9	1.8 J	1.1 J	2.0	3.1 J
			Insufficient Data for Trend Analysis						
		Nov-18	<2.0	<2.0	—	3.3	<2.0	<2.0	n/a
<i>PW-240</i>	Annual	Sep-20	<1.9	<1.9	<1.9	2.0	<1.9	1.8 J	1.8 J‡
		Aug-21	<2.0	<2.0	<2.0	1.7 J	<2.0	<2.0	N/A
			Insufficient Data for Trend Analysis						
<i>PW-241</i>	Annual	Nov-18	<2.0	<2.0	—	6.1	0.98 J	2.9	3.9 J
			Insufficient Data for Trend Analysis						
		Sep-18	2.4	1.6 J	—	18	1.4 J	40	41 J
		Oct-18	2.3	1.7 J	—	20	1.6 J	36	38 J
		Mar-19	1.8 J	2.0	—	20	<2.0 B*	31	31 B*‡
		Jun-19	1.2 J	1.7 J	—	15	<2.0 B*	43	43 B*‡
		Oct-19	1.3 J	1.8 J	5.4	16	1.4 J	45	46 J
		Sep-20	0.90 J	1.3 J	4.4	9.9	0.71 J	38	39 J
		Dec-20	<2.0	1.1 J	2.8	6.9	0.51 J	30	31 J
<i>PW-401</i>	Quarterly	Mar-21	0.74 J	1.5 J	4.4	7.7	1.0 J	30	31 J
		Jun-21	0.28 J	0.32 JH*	1.2 J	2.2	<2.0	14	14 ‡
		Aug-21	<1.9	<1.9	1.5 J	3.1 J*	<1.9	22 J*	22 J*‡
		Oct-21	0.37 J	1.2 J	2.3	5.3	<1.9	17	17 ‡

- Notes: Table includes the results of Mann-Kendall nonparametric trend analysis with Monitoring and Remediation Optimization System (MAROS) classification. Trend analyses requires at least four samples for the data set in order to provide a meaningful statistical assessment. Sample locations with less than four data points are omitted from statistical analysis.
- Sample locations with greater than or equal to 50 percent non-detect results are omitted form statistical analysis.
- Sample not collected
- ng/L nanograms per liter, equivalent to parts per trillion
- † U.S. Environmental Protection Agency (EPA) Lifetime Health Advisory (LHA) level is 70 ng/L for PFOS and PFOA combined.
  - < Analyte was not detected; reported as < the laboratory reporting limit (RL)
  - Analyte not requested
  - J Estimated concentration, detected greater than the detection limit (DL) and less than the limit of quantitation (LOQ). Flag applied by the laboratory.
  - J\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.
  - JL\* Estimated concentration, biased low due to quality control failures. Flag applied by Shannon & Wilson, Inc.
  - JH\* Estimated concentration, biased high due to quality control failures. Flag applied by Shannon & Wilson, Inc.
  - B\* Result is considered not detected due to quality control failures; see checklist for details. Flag applied by Shannon & Wilson, Inc.
- N/A Not applicable. The LHA Combined concentration could not be calculated because PFOS and PFOA were not detected in the project sample or there is insufficient data or a lack of quantifiable results (less than 50 percent) from which to conduct a Mann-Kendall analysis.
- ‡ Minimum concentration, the LHA Combined concentration includes one or more result that is not detected greater than the MDL.

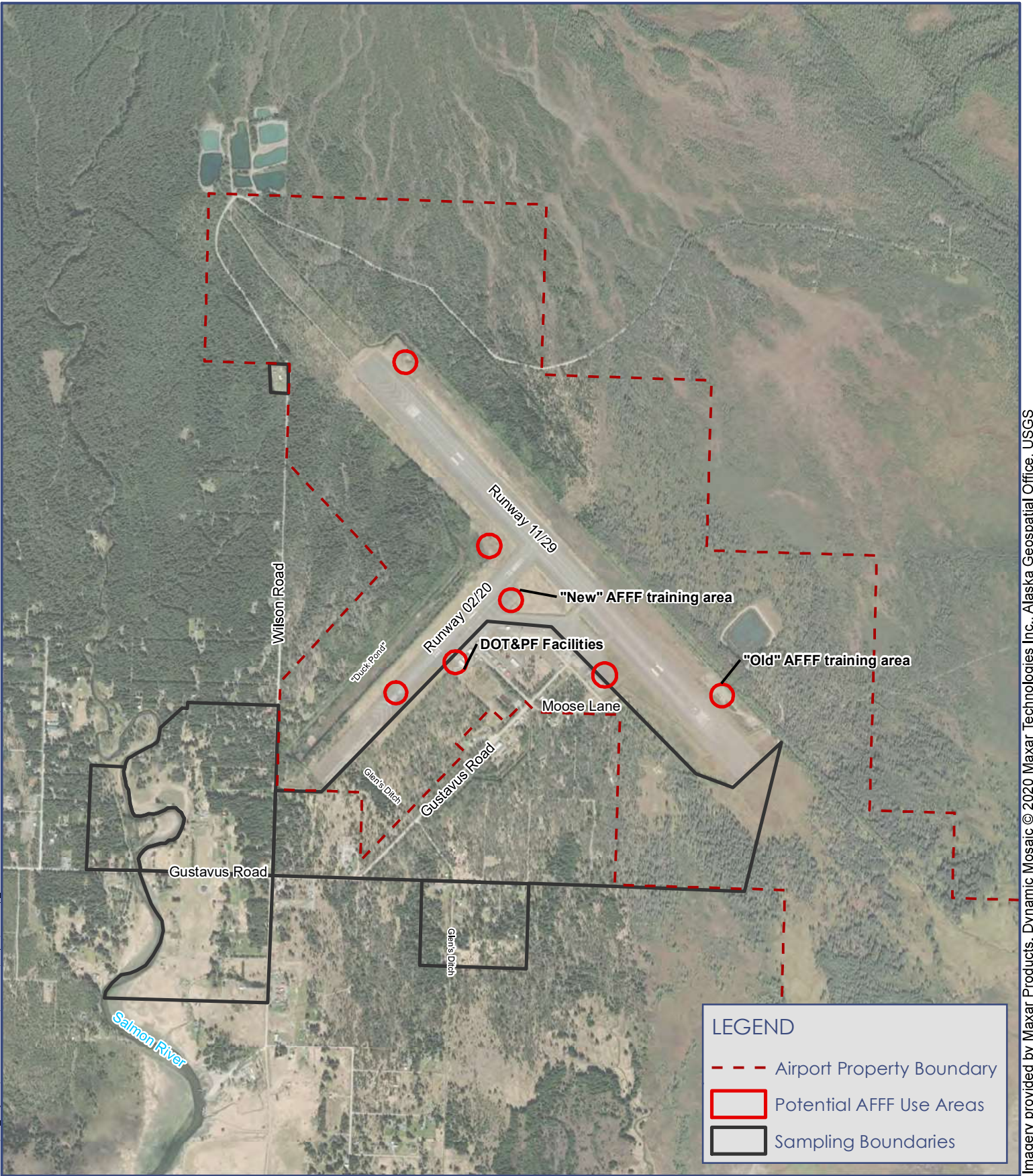


	Oct-21	<1.8	<1.8	<1.8	0.76 J	<1.8	<1.8	<1.8	N/A
	Feb-22	0.23 J	<1.9	1.1 J	0.64 J	<1.9	<1.9	<1.9	N/A
	Apr-22	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
	<b>Trend:</b>	N/A	N/A	N/A	<b>Stable</b>	N/A	N/A	N/A	N/A
MW-1-40	Oct-19	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
	Aug-20	<1.7	<1.7	<1.7	<1.7 B*	<1.7	<1.7	<1.7	N/A
	Dec-20	<1.8	<1.8	<1.8	1.1 J	<1.8	<1.8	0.56 J*	0.56 J*‡
	Mar-21	<1.7	<1.7	<1.7	0.68 J	<1.7	<1.7	<1.7	N/A
	Jun-21	<1.8	<1.8	<1.8	0.68 J	<1.8	<1.8	<1.8	N/A
	Aug-21	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	N/A
	Oct-21	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	N/A
	Feb-22	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
	Apr-22	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	N/A
		<b>Trend:</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MW-2-20	Oct-19	<1.9	0.95 J	4.6	3.9	<1.9	1.5 J	3.8	5.3 J
	Sep-20	3.0	37	84	32	4.0	36	<b>260</b>	<b>296</b>
	Dec-20	9.5	54	63	64	4.0	67	<b>250</b>	<b>317</b>
	Mar-21	2.4	26	31	100	4.0	<b>78</b>	<b>250</b>	<b>328</b>
	Jun-21	2	27	48	120	15	32	450	482
	Aug-21	2.2	39	64	41	9.0	35	<b>520</b>	<b>555</b>
	Oct-21	2.6	49	93	40	7.0	24	<b>360</b>	<b>384</b>
	Feb-22	6.2	88	190	52	4.9	30	<b>260</b>	<b>290</b>
	Apr-22	2.3	21	20	73	18	69	<b>340</b>	<b>409</b>
		<b>Trend:</b>	<b>No Trend</b>	<b>No Trend</b>	<b>No Trend</b>	<b>No Trend</b>	<b>Increasing</b>	<b>No Trend</b>	<b>Probably Increasing</b>
MW-2-30	Oct-19	1.5 J	<1.8	<1.8	1.4 J	<1.8	<1.8	<1.8	N/A
	Sep-20	1.3 J	<1.7	<1.7	<1.7 B*	<1.7	<1.7	<1.7	N/A
	Dec-20	1.4 J	0.70 J	<1.8	<1.8	0.48 J	1.4 J	<1.8	1.4 J‡
	Mar-21	0.91 J	<1.8	<1.8	0.54 J	<1.8	<1.8	<1.8	N/A
	Jun-21	1.2 J	<1.8	0.60 J	<1.8	<1.8	<1.8	<1.8	N/A
	Aug-21	1.4 J	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	N/A
	Oct-21	1.1 J	<1.8	0.54 J*	<1.8	0.54 J*	<1.8	0.51 J	0.51 J‡
	Feb-22	0.94 J	<1.9	<1.9	0.61 JH*	<1.9	<1.9	<1.9	N/A
	Apr-22	0.62 J	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		<b>Trend:</b>	<b>Decreasing</b>	N/A	N/A	N/A	N/A	N/A	N/A
MW-3-15	Oct-19	<1.8	<1.8	<1.8	3.7	<1.8	<1.8	9.5	9.5 ‡
	Sep-20	0.57 J	0.44 J	1.0 J	4.5	<1.7	<1.7	6.7	6.7 ‡
	Dec-20	1.2 J	2.7	5.1	3.6	<1.8	0.94 J	5.1	6.0 J
	Mar-21	0.24 J*	<1.7 J*	0.87 J*	1.9 J*	<1.7 J*	<1.7 J*	3.1 J*	3.1 J‡
	Jun-21	<1.7	<1.7	0.62 J	1.2 J	<1.7	<1.7	2.0	2.0 ‡
	Aug-21	0.23 J	<1.8	<1.8	1.1 JH*	<1.8	<1.8	1.8	1.8
	Oct-21	0.45 J*	<1.9	0.61 J	5.8	<1.9	<1.9	2.7	2.7
	Feb-22	-	-	-	-	-	-	-	-
	Apr-22	0.55 J	<1.10	0.60 J	1.8 J	<1.9	<1.9	2	2
		<b>Trend:</b>	<b>Stable</b>	N/A	<b>Decreasing</b>	<b>Stable</b>	N/A	N/A	<b>Decreasing</b>
MW-3-40	Oct-19	3.2	1.1 J	5.3	32	<1.9	2.8	9.0 J*	11 J*
	Sep-20	1.9	0.63 J	2.9	19	<1.7	2.2	12	14
	Dec-20	1.2 J	0.43 J	1.6 J	14	<1.8	1.3 J	13 J*	14 J*
	Mar-21	0.93 J	<1.7	2.4	17	<1.6	1.7	13	15
	Jun-21	1.1 J	0.43 J	2.1	15	<1.7	1.5 J	15	17 J
	Aug-21	1.1 J	<1.8	1.4 J	13	<1.8	1.2 J	14	15 J ‡
	Oct-21	1.0 J	<1.9	1.8 J	12	<1.9	1.1 J	12	13 J‡
	Feb-22	0.74 JL*	0.48 JL*	1.3 JL*	6.8 JL*	<1.9 J*	<1.9 J*	7.1 JL*	7.1 JL*
	Apr-22	1.5 J	0.56 J	3.2	12	<1.9	1.2 J	15	16 J‡
		<b>Trend:</b>	<b>Decreasing</b>	<b>No Trend</b>	<b>Probably Decreasing</b>	<b>Decreasing</b>	N/A	<b>Decreasing</b>	<b>No Trend</b>
MW-4-20	Oct-19	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
	Sep-20	0.32 J	0.28 J	<1.7	<1.7 B*	<1.7	<1.7	<1.7	N/A
	Dec-20	0.46 J*	<1.8	<1.8	0.65 J	<1.8	<1.8	<1.8	N/A
	Mar-21	<1.7	<1.7	<1.7	0.50 J	<1.7	<1.7	<1.7	N/A
	Jun-21	0.19 J	<1.7	<1.7	0.63 J	<1.7	<1.7	<1.7	N/A
	Aug-21	<1.8	<1.8	<1.8	0.64 JH*	<1.8	<1.8	<1.8	N/A

	Oct-21	0.41 J	<1.8	<1.8	0.88 J	<1.8	0.81 J	3.6	4.4 J‡
	Feb-22	0.22 J	<1.9	<1.9	1.1 J	<1.9	<1.9	2.9	2.9
	Apr-22	0.44 J	<1.8	<1.8	1.7 J	<1.8	<1.8	3.4	3.4
	<b>Trend:</b>	<b>No Trend</b>	N/A	N/A	<b>Probably Decreasing</b>	N/A	<b>Stable</b>	<b>Increasing</b>	<b>No Trend</b>
MW-6-20	Oct-19	<1.9	<1.9	<1.9	2.9	<1.9	<1.9	<1.9	N/A
	Sep-20	0.30 J	<1.7	<1.7	<1.8 B*	<1.7	<1.7	0.91 J	0.91 J‡
	Jan-21	0.37 J	0.29 J*	<1.7	2.7	<1.8	<1.8	1.3 J*	1.3 J*‡
	Mar-21	0.30 J*	<1.8 J*	<1.8 J*	1.0 J*	<1.8	<1.8	1.5 J*	1.5 J*‡
	Jun-21	<1.7	<1.7	<1.7	1.1 J	<1.7	<1.7	<1.7	N/A
	Aug-21	<1.8	<1.8	<1.8	0.69 J	<1.8	<1.8	<1.8	N/A
	Oct-21	<1.8	<1.8	<1.8	1.1 J	<1.8	<1.8	<1.8	N/A
	Feb-22	<1.9 J*	<1.9 J*	<1.9 J*	0.90 J*	<1.9 J*	<1.9 J*	<1.9 J*	N/A
	Apr-22	<1.9	0.34 J	<1.9	1.6 J	<1.9	<1.9	1.4 J	1.4 J
		<b>Trend:</b>	N/A	N/A	N/A	<b>Probably Decreasing</b>	N/A	N/A	N/A
MW-7-20	Oct-19	0.35 J	0.56 J	1.1 J	1.5 JH*	<1.9	1.4 J	1.3 J	2.7 J
	Sep-20	0.45 J	0.84 J	1.2 J	<1.7 B*	<1.7	2.7	3.9	6.6
	Dec-20	0.43 J	0.91 J	1.2 J	1.1 J	<1.9	1.3 J	4.8	5.9 J
	Mar-21	<1.7	1.0 J	1.3 J	0.98 J	<1.7	2.3	5.0	7.3
	Jun-21	0.46 J	0.96 J	1.2 J	1.0 J	<1.8	6.7	6.2	13
	Aug-21	<1.8	0.75 J	2.9	1.0 J	<1.8	3.4	13	16
	Oct-21	0.21 J	0.61 J	1.8 J	0.67 J	<1.9	2.6	14	17
	Feb-22	-	-	-	-	-	-	-	-
	Apr-22	<1.9	0.54 J	<1.9	0.74 J	<1.9	1.2 J	5.7	6.9 J‡
		<b>Trend:</b>	<b>Probably Increasing</b>	<b>Stable</b>	<b>Increasing</b>	<b>Decreasing</b>	N/A	<b>Stable</b>	<b>Increasing</b>
MW-8-20	Oct-19	<1.9	<1.9	<1.9	<1.9 B*	<1.9	<1.9	0.81 J	0.81 J‡
	Sep-20	<1.7	<1.7	<1.7	<1.7 B*	<1.7	<1.7	<1.7	N/A
	Jan-21	<1.7	<1.7	<1.7	0.62 J	<1.7	<1.7	<1.7	N/A
	Mar-21	<1.8 J*	<1.8 J*	<1.8 J*	0.57 J*	<1.8 J*	<1.8 J*	<1.8 J*	N/A
	Jun-21	<1.7	0.23 J	<1.7	0.49 J	<1.7	<1.7	<1.7	N/A
	Aug-21	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
	Oct-21	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	2.3	2.3
	Feb-22	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
	Apr-22	<1.8	<1.8	<1.8	0.83 J	<1.8	<1.8	<1.8	N/A
		<b>Trend:</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MW-9-30	Oct-19	1.2 J	2.2	5.5	15 B	<1.9	1.5 J	97	99 J
	Sep-20	1.6 J	6.0	16	23	<1.7	2.3	88	90
	Dec-20	0.66 J	2.0	4.6	11	<1.8	1.0 J	92	93 J
	Mar-21	1.2 J	3.0	8.9	15	<1.8	1.0 J	97	98 J
	Jun-21	0.79 J	3.2	7.0	15	<1.8	1.1 J	95	96 J
	Aug-21	0.96 J	1.9	5.5	9.8	<1.8	1.2 J	43	44 J‡
	Oct-21	0.78 J	2.9	7.7	10	<1.8	0.87 J	37	38 J‡
	Feb-22	0.75 J*	2.8 JL*	6.4 JL*	12 JL*	<1.9 J*	1.5 JL*	45 JL*	47 JL*‡
	Apr-22	0.57 J	2.3	5.6	8.9	<1.9	1.3 J	67	68 J‡
		<b>Trend:</b>	<b>Decreasing</b>	<b>Stable</b>	<b>Stable</b>	<b>Decreasing</b>	N/A	<b>Stable</b>	<b>Probably Decreasing</b>
MW-10-20	Oct-19	0.75 J	2.3	5.6	12	<1.9	1.2 J	49	50 J
	Sep-20	0.64 J	4.5	11	13	0.42 J	2.6	140	143
	Jan-21	0.42 J	1.8	5.3	5.4	<1.8	<1.8	39	39 ‡
	Mar-21	1.3 J*	4.8	16 J*	17 J*	<1.7	1.9	37 J*	39 J*
	Jun-21	0.87 J	5.6	15	21	<1.8	2.0	95	97
	Aug-21	1.3 J	6.3	15	19	<1.8	2.1	91	93
	Oct-21	0.38 J	2.9	6.4	8.4	<1.8	1.1 J	81	82 J‡
	Feb-22	0.73 JL*	1.9 JL*	8.7 JL*	11 JL*	<1.9 J*	1.6 JL*	26 JL*	28 JL*J‡
	Apr-22	0.42 J	3.1	8.4	8.3	<1.9	1.2 J	62	63 J‡
		<b>Trend:</b>	<b>Stable</b>	<b>No Trend</b>	<b>No Trend</b>	<b>Stable</b>	N/A	<b>Stable</b>	<b>Stable</b>
	Oct-19	1.3 J	4.8	18	12 B	1.0 J	1.9	39	41
	Sep-20	2.2	7.0	27	15	1.4 J	2.4	<b>76</b>	<b>78</b>
	Dec-20	35	19	180	830	2.2	92	<b>6,100</b>	<b>6,192</b>
	Mar-21	1.4 J	3.0	15	20	0.62 J	2.2	<b>210</b>	<b>212</b>
	Jun-21	1.0 J	3.0	18	13	0.88 J	2.1	<b>140</b>	<b>142</b>

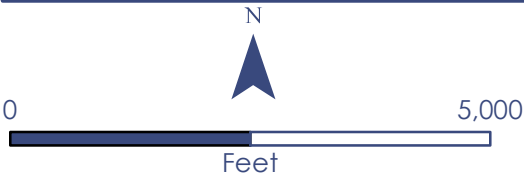
Oct-21	0.35 J*	4.4	2.9	11	0.91 J*	2.6	30	32
Feb-22	-	-	-	-	-	-	-	-
Apr-22	<1.8	1.8	1.6 J	3.7	1.2 J	2.2	12	14
<b>Trend:</b>	<b>Probably Decreasing</b>	<b>Decreasing</b>	<b>Decreasing</b>	<b>Decreasing</b>	<b>Stable</b>	<b>Decreasing</b>	<b>Decreasing</b>	<b>Decreasing</b>

- Notes: Table includes the results of Mann-Kendall nonparametric trend analysis with Monitoring and Remediation Optimization System (MAROS) classification. Trend analyses requires at least four samples for the data set in order to provide a meaningful statistical assessment. Sample locations with less than four data points are omitted from statistical analysis.
- Sample locations with greater than or equal to 50 percent non-detect results are omitted form statistical analysis.
- The highest result of field duplicate pairs are used for statistical analysis.
- ng/L nanograms per liter, equivalent to parts per trillion
- † U.S. Environmental Protection Agency (EPA) Lifetime Health Advisory (LHA) level is 70 ng/L for PFOS and PFOA combined.
- < Analyte was not detected; reported as < the laboratory reporting limit (RL)
- Sample not collected.
- J Estimated concentration, detected greater than the detection limit (DL) and less than the limit of quantitation (LOQ). Flag applied by the laboratory.
- J\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.
- JL\* Estimated concentration, biased low due to quality control failures. Flag applied by Shannon & Wilson, Inc.
- JH\* Estimated concentration, biased high due to quality control failures. Flag applied by Shannon & Wilson, Inc.
- B\* Result is considered not detected due to quality control failures; see checklist for details. Flag applied by Shannon & Wilson, Inc.
- N/A Not applicable. The LHA Combined concentration could not be calculated because PFOS and PFOA were not detected in the project sample or there is insufficient data or a lack of quantifiable results (less than 50 percent) from which to conduct a Mann-Kendall analysis.
- ‡ Minimum concentration, the LHA Combined ocentration includes one or more result that is not detected greater than the MDL.

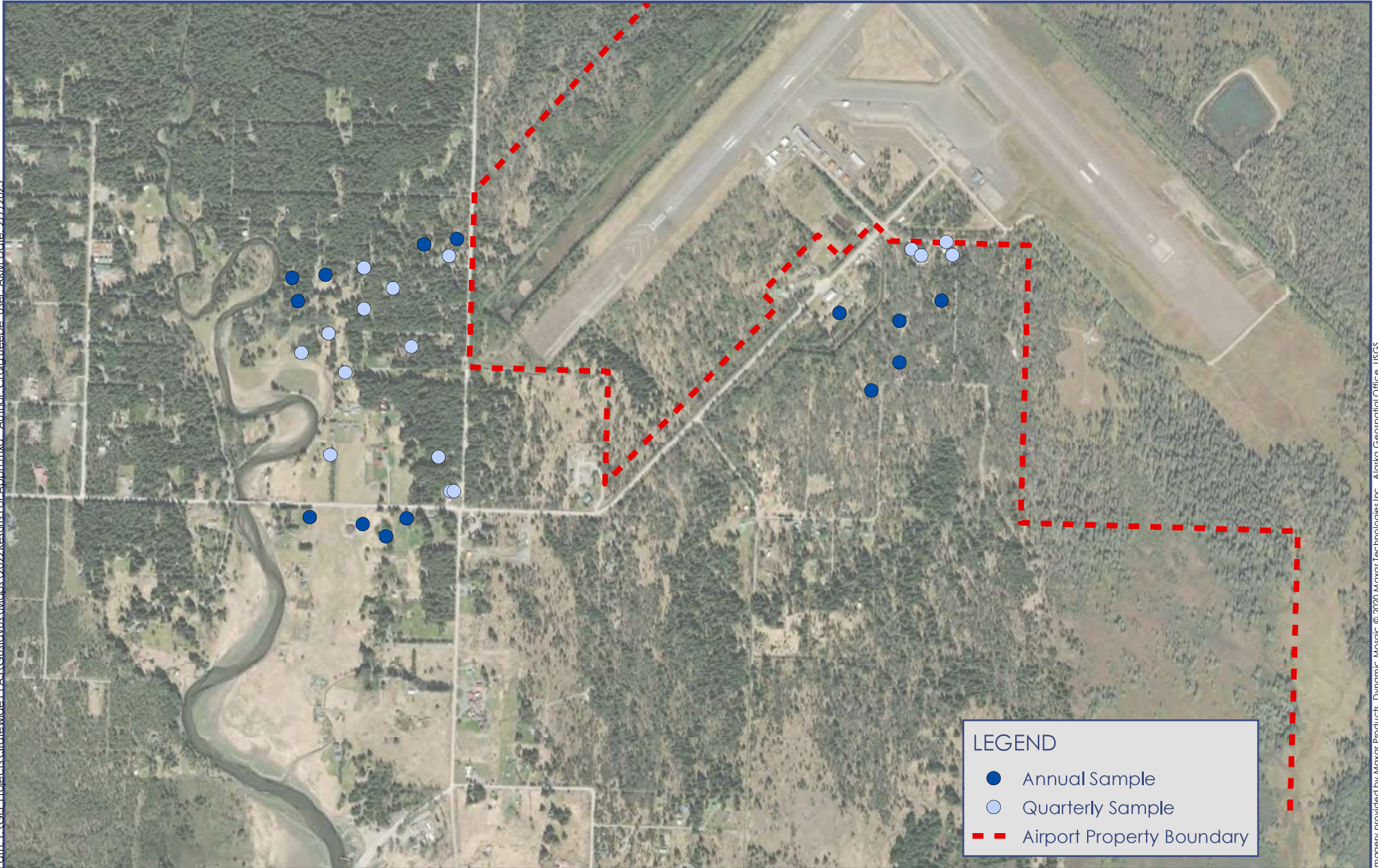


Path: T:\GIS\Projects\Statewide PFAS\Gustavus Maps\Site Map\_2021 WP.mxd Author: User: ARM Date: 2/7/2023

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May 2023  
**SITE MAP**  
Figure 1



Path: T:\GIS\Projects\Statewide PFAS\Gustavus\Maps\2022ResultsForApril.mxd - Author: Craig Beebe - User: ARM - Date: 2/7/2023

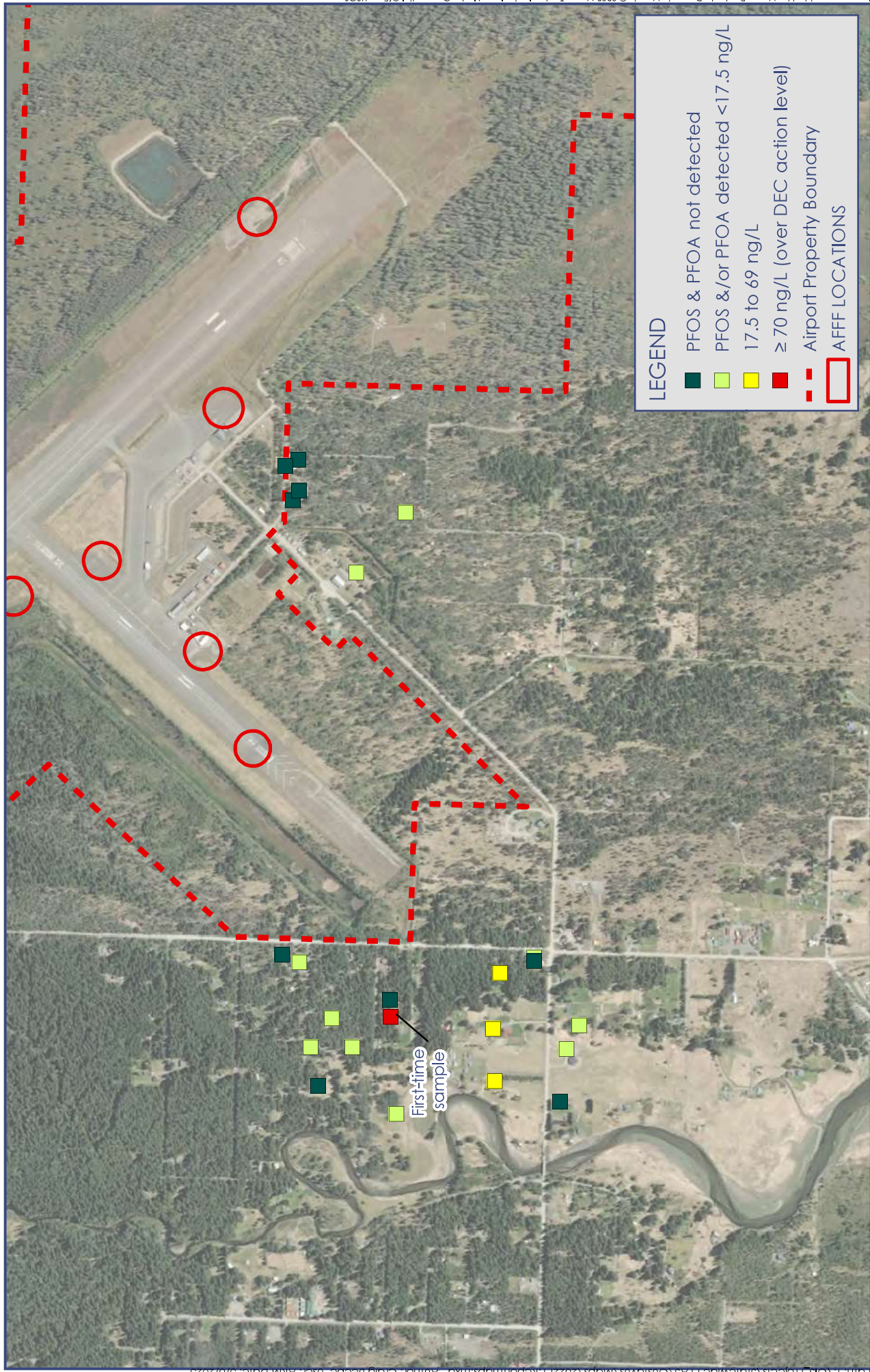
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May 2023

**FY 2022 WATER SUPPLY WELL MONITORING NETWORK**

**Figure 2**





Notes:

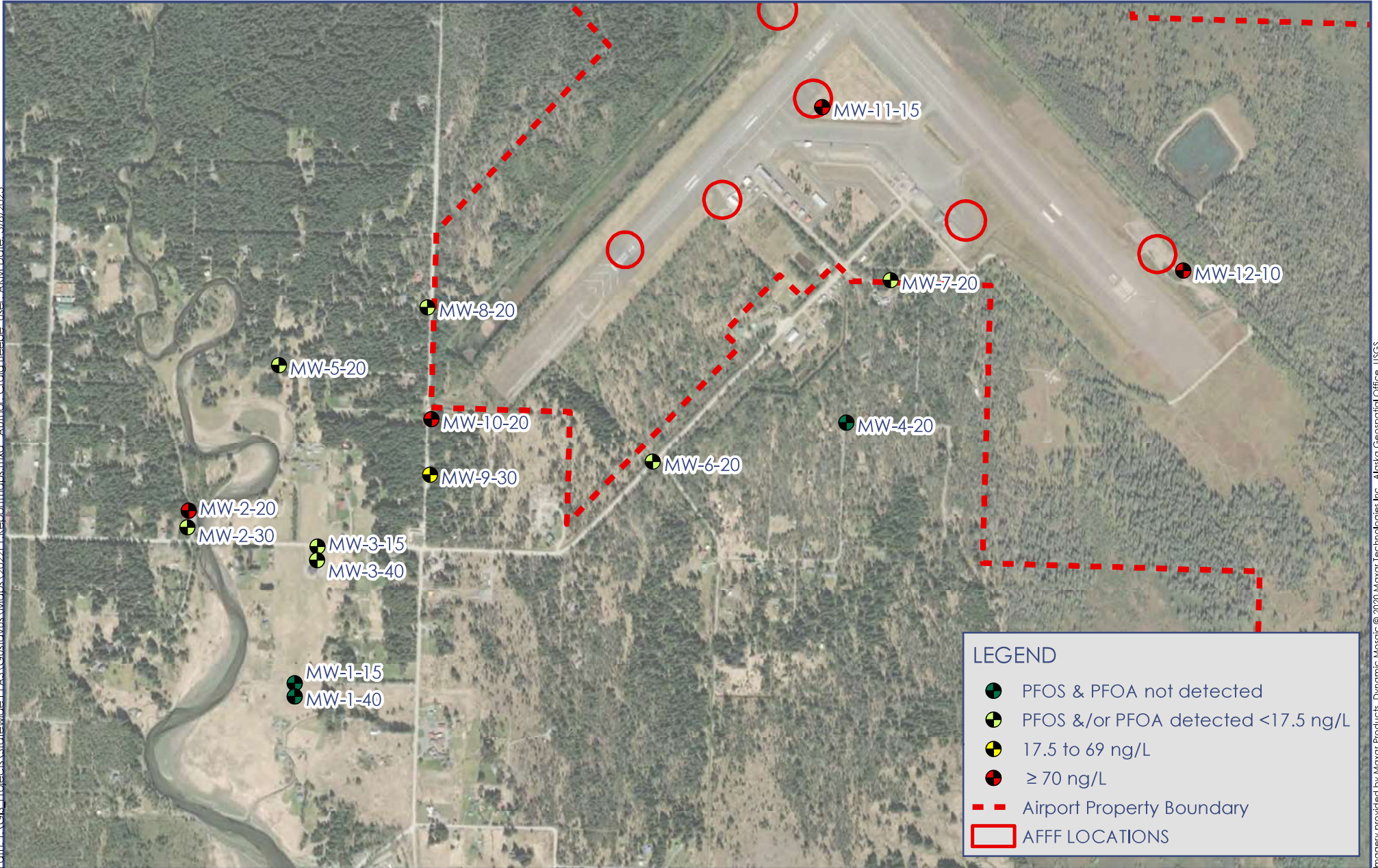
Current DEC drinking water action level is 70 ng/L for the sum of PFOS + PFOA.  
\*Quarterly and annual water-supply wells not sampled during the reporting period have been excluded from this map.  
ng/L = nanograms per liter

May 2023

**HIGHEST PFOS + PFOA RESULTS WATER-SUPPLY WELL SAMPLES COLLECTED AUGUST 2021 - APRIL 2022**

Figure 3

Path: T:\GIS Projects\Statewide PFA\Gustavus\Maps\2022\FY\_Report\mqs.mxd Author: Craig Beebe User: ARM Date: 3/8/2023  
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Path: T:\GIS\Projects\Statewide PFAS\Gustavus\Maps\2022\FY\_Report\maps.mxd Author: Craia Beebe User: ARM Date: 3/8/2023

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**LEGEND**

- PFOS & PFOA not detected
- PFOS &/or PFOA detected <17.5 ng/L
- 17.5 to 69 ng/L
- ≥ 70 ng/L
- - - Airport Property Boundary
- AFFF LOCATIONS

**Notes:**  
 Current DEC drinking water action level is 70 ng/L for the sum of PFOS + PFOA.  
 \* Overlapping results are offset from exact locations for reporting purposes. The shallowest well in the cluster is centered on the cluster location.  
 ng/L = nanograms per liter



May 2023  
**HIGHEST PFOS + PFOA RESULTS MONITORING WELL**  
**SAMPLES COLLECTED AUGUST 2021 - APRIL 2022**

**Figure 4**

Appendix A  
**Field Notes**

CONTENTS

- Residential Well Sampling Logs
- Monitoring Well Sampling Logs

**Redacted for Privacy**



## Appendix B

# Public Information

### CONTENTS

- Results Letter Template
- Gustavus Airport PFAS Fact Sheet

DATE

Full Name/s  
Mailing Address  
Gustavus, AK 99826

**RE: RESULTS OF APRIL 2022 PFAS WATER SUPPLY WELL SAMPLING,  
GUSTAVUS AIRPORT**

Thank you for participating in our water supply well sampling program to evaluate the presence of per- and polyfluoroalkyl substances (PFAS) in groundwater near the Gustavus Airport. Shannon & Wilson, Inc. collected a water sample from your water supply well at PHYSICAL ADDRESS on April X, 2022. We have prepared an identical letter for your tenant/s NAME.

The water sample was analyzed for perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and several other PFAS compounds. We compare these concentrations to the U.S. Environmental Protection Agency's (EPA) health advisory level for drinking water. The lifetime health advisory level is 70 parts per trillion (ppt) for the sum of PFOS and PFOA. Please note that these units are equivalent to nanograms per liter (ng/L).

Results of the analysis conducted by Eurofins TestAmerica indicate that PFOS was not/was detected at X ppt, and PFOA was not/was detected at X ppt in the water sample from your well. The sum of these concentrations is less than the lifetime health advisory level. The portions of the original laboratory report that apply to your well (sample number XXXXXX and field-duplicate sample XXXXXX) are enclosed for your records.

Shannon & Wilson has conducted this sampling event on behalf of the Alaska Department of Transportation and Public Facilities (DOT&PF). Please see the enclosed PFAS fact sheet for a link to the DOT&PF project website.

Name/s  
Business Name  
DATE  
Page 2

If you have any questions regarding your results, please feel free to contact us.

Sincerely,

**SHANNON & WILSON, INC.**

Enc: Select Pages of Test America Laboratory Report No.####  
PFAS Fact Sheet - Gustavus Airport



## PFAS Fact Sheet – Gustavus Airport

February 2022

Per- and polyfluoroalkyl substances (PFAS) are a group of manmade chemicals used for a wide variety of residential, commercial, and industrial uses. PFAS are considered emerging environmental contaminants and the health effects are not well known.

The presumed source of PFAS in groundwater in your community is the use of a fire-fighting foam called aqueous film forming foam (AFFF). Airport firefighters used the foam to extinguish petroleum fires during training exercises and emergency events.

The Alaska Department of Transportation & Public Facilities (DOT&PF) has tested approximately 120 private water-supply wells starting in August 2018. Private wells on airport property and wells along and off the southern portion of Wilson Road were found to be impacted.

The DOT&PF has hired Shannon & Wilson to test private wells for perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). The U.S. Environmental Protection Agency (EPA) lifetime health advisory (LHA) level for drinking water is **70 parts per trillion** for the sum of PFOS and PFOA.

We advise residents with test results above this level not to use their water for drinking or cooking. If your well is considered affected, you can continue to shower, clean, and do laundry.

Test results are typically available within three to four weeks of sample collection. If your well is found to have PFAS above the EPA LHA, DOT&PF will assist with access to an alternate source of drinking water.

**For results and sampling area map:**  
[www.dot.alaska.gov/airportwater/gustavus](http://www.dot.alaska.gov/airportwater/gustavus)

### **For questions about well testing:**

Shannon & Wilson, Inc.  
Kristen Freiburger, Project Manager  
Phone: 907-458-3146  
Email: [kristen.freiburger@shanwil.com](mailto:kristen.freiburger@shanwil.com)

### **For regulatory questions:**

Dept. of Environmental Conservation  
Sarah Mutter, Contaminated Sites Program  
Phone: 907-465-5237  
Email: [sarah.mutter@alaska.gov](mailto:sarah.mutter@alaska.gov)

### **For questions about PFAS and health:**

Dept. of Health & Social Services  
Sarah Yoder, Public Health Scientist  
Phone: 907-269-8054  
Email: [sarah.yoder@alaska.gov](mailto:sarah.yoder@alaska.gov)

### **To arrange your next water delivery:**

Jarred Mitrea  
Phone: 559-515-3680

### **To file an insurance claim:**

Dept. of Admin., Risk Management  
Scott Jordan, Risk Assessor  
Phone: 907-465-2183  
Email: [scott.jordan@alaska.gov](mailto:scott.jordan@alaska.gov)

### **For questions about fire training and other inquiries:**

DOT&PF - Statewide Aviation  
Sammy Cummings, Project Manager  
Phone: 907-888-5671  
Email: [airportwater@alaska.gov](mailto:airportwater@alaska.gov)

## Appendix C

# Analytical Results

### CONTENTS

- Quality Control / Quality Assurance Summary
- SGS Laboratory Reports and LDRCs
- Eurofins Laboratory Reports and LDRCs

## APPENDIX C: ANALYTICAL RESULTS

°C	degrees Celsius
COC	chain-of-custody
DEC	Alaska Department of Environmental Conservation
DRO	diesel range organics
DQO	data quality objective
HFPO-DA	hexafluoropropylene oxide dimer acid
IDA	isotope dilution analysis
LCS	laboratory control samples
LCSD	LCS duplicate
LDRC	Laboratory Data Review Checklist
LOD	limit of detection
LOQ	limit of quantitation
MB	method blank
MS	matrix spike
MSD	MS duplicate
PAH	polycyclic aromatic hydrocarbons
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutanesulfonic acid
PFDA	perfluorodecanoic acid
PFD <sub>o</sub> A	perfluorododecanoic acid
PFHpA	perfluoroheptanoic acid
PFH <sub>x</sub> A	perfluorohexanoic acid
PFH <sub>x</sub> S	perfluorohexanesulfonic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonic acid
PFT <sub>r</sub> DA or PFT <sub>r</sub> A	perfluorotridecanoic acid
PFU <sub>n</sub> A	perfluoroundecanoic acid
QA	quality assurance
QC	quality control
RL	reporting limit
RPD	relative percent difference
RRO	residual range organics
SGS	SGS North America, Inc.
TB	trip blank
WO	work order

## QA/QC SUMMARY

Quality Assurance/Quality Control (QA/QC) procedures assist in producing data of acceptable quality and reliability. Shannon & Wilson reviewed the analytical results for laboratory QC samples and conducted a QA assessment for this project. Staff reviewed the chain-of-custody records and laboratory-receipt forms to verify custody was not breached, sample holding-times were met, and the samples were properly handled from the point of collection through analysis by the laboratory. QA review procedures document the accuracy and precision of the analytical data, as well as check the analyses were sufficiently sensitive to detect analytes at levels below regulatory standards.

Please note, the laboratory applies the flag 'J' to a detection reported less than the reporting limit but greater than the detection limit; this "flagged" datum is considered an estimated concentration. Qualified environmental staff reviewed the data using the current DEC laboratory data review checklist (LDRC) and applied standardized qualifiers to any result found to have been affected by a QC issue. Unless rejected, a qualified result is considered usable data. During the QC review, flags were applied to indicate estimated data or analytical bias, as applicable.

Our summary below provides details regarding QA/QC failures that resulted in flags being applied to the data set. For further details of failures not resulting in flags, please refer to the LDRCs.

## SAMPLE HANDLING

Our WSW sampling protocols describe sampling directly from the homes plumbing system to prevent PFAS contamination not associated with the drinking-water system and before water treatment systems such as water softeners.

Deviations from sampling protocols from August 2021 through June 2022 include:

- In August 2021, sample *PW-467* (WO 320-78307-1) was collected with a pump from the newly driven well. The home was in development, plumbing had not been connected to the well at the time the sample was collected.
- In August 2021, October 2021, and February 2022, sample *PW-012* was collected from after a water softener in August 2021. In subsequent sampling events, the owner of this property indicated the softener was no longer functioning.
- In August 2021, sample *PW-205.1* was collected through a PVC pipe attached to the well pump. Plumbing was not connected to the home on this property.

Detected results for the above samples have been flagged 'J' as estimated for a deviation from the sampling method.

Coolers containing water samples were shipped via Alaska Goldstreak to the laboratories to perform the analyses noted on the chain-of-custody (COC). The coolers with water samples contained a temperature blank to measure whether samples were kept appropriately cold. Lab personnel measured the temperature blank at the time the samples arrived at each of their facilities; the temperature blank was recorded within the proper temperature range upon arrival at the laboratories.

Monitoring well samples are collected following stabilization of parameters, as noted in Section 2.1 or once three well volumes have been purged. The following samples were collected prior to full stabilization:

- In August 2021, monitoring well samples *MW-8-20* and *MW-7-20* were collected before stabilization of parameters.

Due to heavy rainfall and snowmelt during the February 2022 sampling event, samplers noted situations where potentially significant amounts of surface water entered the well casing during sampling the PFAS results for the following wells are considered potentially biased low and were flagged 'UJ' for non-detect values and "JL" for detected values:

- *MW-3-40*
- *MW-6-20*
- *MW-9-30*
- *MW-10-20*

Our review of COC records and laboratory sample-receipt documents did not reveal sample-handling anomalies that would affect the quality or usability of the data, and the samples were processed within the appropriate method holding times. Data is considered usable with the flags noted above.

## ANALYTICAL SENSITIVITY

Shannon & Wilson compared groundwater-sample limits of detection (LODs) for SGS data and reporting limits (RLs) for Eurofins data to the DEC regulatory levels. For groundwater data, LODs and RLs were less than DEC-established cleanup or action levels, where applicable.

PFAS analysis uses isotope dilution method for analysis. This analytical technique requires the observation of the transition mass ratios. The ratios associated with PFAS analysis were



within limit for the project data set. The following exceptions are flagged in the associated data tables due to transition mass ratios outside of laboratory limits:

- Eurofins 320-78307-1: PFOA results for sample *PW-059* are considered estimated and flagged 'J' in the associated data tables.
- Eurofins 320-81057-1: PFOS results for sample *PW-059* are considered estimated and flagged 'J' in the associated data tables.
- Eurofins 320-84759-1: PFOS results for sample *PW-211* are considered estimated, biased high and flagged 'JH' in the associated data tables.
- Eurofins 320-78303-1: PFHxS results for *MW-3-15* and *MW-4-20* are considered estimated, with high bias, and flagged 'JH' in the associated data tables.
- Eurofins 320-80156-1: PFBS results for sample *MW-3-15* and PFHxA results for sample *MW-2-30* are considered estimated, biased high, and flagged "JH" in the associated data tables.
- Eurofins 320-81259-1: PFBS results for sample *MW-12-10* are considered estimated, biased high, and flagged "JH" in the associated data tables.
- Eurofins 320-84757-1: PFHxS results of samples *MW-2-30* and *MW-6-20* and PFBS results of sample *MW-9-30* are considered estimated, biased high, and flagged "JH" in the associated data tables.
- Eurofins 320-87432-1: perfluorononanoic acid (PFNA) results for sample *MW-11-15* are considered estimated, and flagged "J" in the associated data tables.

The laboratory analyzes a method blank (MB) with each sample batch to provide information regarding potential for analyte carryover during analysis. Project analytes were not detected in the MBs associated with the project WOs with the following exceptions.

- SGS 1220600: DRO was detected below the limit of quantitation (LOQ) in the MB. DRO results for field duplicate pair *MW-11-15/MW-111-15*, and *EB-11-15* are considered not-detected, and are flagged with a 'UB' at the LOQ in the associated data tables.

Shannon & Wilson submits a laboratory-provided trip blank (TB) with each of the volatile analyses for this project. A TB is used to determine if cross-contamination associated with sample handling and transport is contributing to the project sample results. Project analytes were not detected in the TBs associated with the project WOs.

Shannon & Wilson also collected equipment blanks for each sampling event where sampling was conducted with reusable equipment. These samples are collected to detect residual contamination on equipment that may contribute to cross contamination in the project samples. Project analytes were not detected in the project samples with the following exceptions.

- SGS 1220600: 2-methylnaphthalene, naphthalene, DRO, RRO, and toluene were detected in the equipment blank affecting field duplicate pair *MW-11-15/ MW-111-15*. The DRO and RRO results are considered not detected, flagged with a 'UB' at the LOQ, unless previously flagged. Other analytes detected in the equipment blank were not detected in the project samples and did not require qualification.

## ACCURACY

The laboratory assessed the accuracy of its analytical procedures by analyzing laboratory control samples (LCS), LCS duplicate samples (LCSD) matrix spike samples (MS), MS duplicate samples (MSD) and laboratory duplicate samples. LCS/LCSD analysis allows the laboratory to evaluate their ability to recover analytes added to clean aqueous matrices, and MS/MSD analysis allows the laboratory to evaluate their ability to recovery analytes added to project sample matrices.

LCS/LCSD and MS/MSD recoveries were within laboratory limits for the project samples, where reported with the following exceptions:

- The LCS/LCSD RPD results were outside of DQOs for 1-methylnaphthalene, 2-methylnaphthalene, acenaphthene, acenaphthylene, fluorene, and naphthalene for field duplicate pair *MW-11-15/MW-111-15*. The non-detect reporting values are considered estimated and flagged "UJ" in the analytical tables.

The laboratory also assessed the accuracy of isotope dilution analysis (IDA) analytes and surrogates added to individual project samples. IDAs and surrogates allow the laboratory to assess the accuracy of their analytical method using chemically similar compounds as those requested for the project sample set. Surrogate and IDA recoveries were within QC limits for the project samples with the following exceptions.

- Eurofins 320-87434-1: the IDA recovery associated with d3-NMeFOSAA for project sample *PW-012* was outside QC limits. The non-detect reporting value is considered estimated and flagged "UJ" in the associated data tables.
- Eurofins 320-87432-1: the IDA recovery associated with 13C2-PFTDA for sample *MW-5-20* was outside laboratory QC limits. The non-detect reporting value is considered estimated and flagged "UJ" in the associated data tables.

## PRECISION

Shannon & Wilson submitted field duplicate samples in our WOs. To evaluate data precision and reproducibility of our sampling techniques, the relative percent difference (RPD) was calculated between the sample and its duplicate. Shannon & Wilson can only evaluate RPDs if the results of the analysis for both the sample and its duplicate are greater than the LOQ or RL for a given analyte. The field-duplicate RPDs for detected analytes were

within the project-specified data quality objective (DQO) of 30 percent for groundwater, with the following exceptions:

- Eurofins 320-78307-1: RPDs for PFHxS and PFOS exceeds the DQO for field duplicate pair *PW-401 / PW-501*. These results are considered estimated with no direction of bias and are flagged “J” in the associated data tables.
- Eurofins 320-78303-1: RPDs for PFBS and PFOS exceed the DQO for field duplicate pair *MW-12-10/MW-112-10*. Results are considered estimated with no direction of bias and are flagged “J” in the associated data tables, unless previously flagged.
- Eurofins 320-81259-1: The RPD for PFNA exceeds the DQO for field duplicate pair *MW-12-10/MW-112-10*. Results are considered estimated with no direction of bias and are flagged “J” in the associated data tables.
- Eurofins 320-87432-1: the RPD for PFOS exceeds the DQO for field duplicate pair *MW-6-20/MW-106-20*. Results are considered estimated with no direction of bias and are flagged “J” in the associated data tables, unless previously flagged.

## DATA QUALITY SUMMARY

By working in general accordance with our proposed scope of services, Shannon & Wilson consider the samples collected for this project to be representative of site conditions at the locations and times they were obtained. Based on our QA review, no samples were rejected as unusable due to QC failures. In general, the quality of the analytical data for this project does not appear to have been compromised by analytical irregularities and is adequate for the purposes of our assessment.

## ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

Laboratory Job ID: 320-78307-1  
Client Project/Site: DOT+PF Gust. PFAS

For:  
Shannon & Wilson, Inc  
2355 Hill Rd.  
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger



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### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.eurofinsus.com/Env](http://www.eurofinsus.com/Env)

*The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

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## Job ID: 320-78307-1

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### Laboratory: Eurofins TestAmerica, Sacramento

#### Narrative

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#### Job Narrative 320-78307-1

#### Receipt

The samples were received on 8/31/2021 3:39 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 5.6° C and 5.8° C.

#### Receipt Exceptions

The container label for the following sample(s) did not match the information listed on the Chain-of-Custody (COC): PW-205 (320-78307-12). The container label has ID as PW-205.1, while COC lists PW-205. The sample was logged in according to COC.

#### LCMS

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. PW-059 (320-78307-16)

Method EPA 537(Mod): Results for sample PW-419 (320-78307-2) was reported from the analysis of a diluted extract due to sample matrix of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-521964.

Method 3535: The following samples were light orange prior to extraction: PW-2001 (320-78307-1), PW-419 (320-78307-2), PW-467 (320-78307-3), NPSWell (320-78307-5), PW-010 (320-78307-6), PW-221 (320-78307-7), PW-032 (320-78307-9), PW-207 (320-78307-11) and PW-205 (320-78307-12).

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-522307.

Method 3535: The following samples were orange with sediment in the sample bottle prior to extraction: PW-240 (320-78307-13), PW-039 (320-78307-14), PW-438 (320-78307-15), PW-059 (320-78307-16), PW-037 (320-78307-17), PW-501 (320-78307-21), PW-219 (320-78307-22), PW-401 (320-78307-23), PW-012 (320-78307-25), PW-061 (320-78307-26), PW-230 (320-78307-27) and PW-112 (320-78307-28).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

## Client Sample ID: PW-2001

Lab Sample ID: 320-78307-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	4.0		1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.1		1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	3.7		1.8	0.78	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.7		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	7.8		1.8	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-419

Lab Sample ID: 320-78307-2

No Detections.

## Client Sample ID: PW-467

Lab Sample ID: 320-78307-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	9.3		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.5		1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.5		1.9	0.80	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.9		1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	27		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	69		1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-212

Lab Sample ID: 320-78307-4

No Detections.

## Client Sample ID: NPSWell

Lab Sample ID: 320-78307-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	3.7		1.9	0.56	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.1		1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	3.3		1.9	0.83	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.2		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	8.1		1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-010

Lab Sample ID: 320-78307-6

No Detections.

## Client Sample ID: PW-221

Lab Sample ID: 320-78307-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	1.0	J	1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-304.1

Lab Sample ID: 320-78307-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	7.2		1.9	0.56	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.1		1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.5		1.9	0.82	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.8		1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	25		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	39		1.9	0.52	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento



# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

## Client Sample ID: PW-032

Lab Sample ID: 320-78307-9

No Detections.

## Client Sample ID: PW-204.1

Lab Sample ID: 320-78307-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	8.0		1.9	0.56	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.7		1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.4		1.9	0.82	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.2		1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	25		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	44		1.9	0.52	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-207

Lab Sample ID: 320-78307-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.89	J	1.9	0.79	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.66	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.95	J	1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-205

Lab Sample ID: 320-78307-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.0	J	1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-240

Lab Sample ID: 320-78307-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.7	J	2.0	0.57	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-039

Lab Sample ID: 320-78307-14

No Detections.

## Client Sample ID: PW-438

Lab Sample ID: 320-78307-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	1.0	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.4		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.8		1.9	0.52	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-059

Lab Sample ID: 320-78307-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.85	J I	2.0	0.84	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.5	J	2.0	0.57	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-037

Lab Sample ID: 320-78307-17

No Detections.

## Client Sample ID: PW-211

Lab Sample ID: 320-78307-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.45	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.83	J	1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

## Client Sample ID: PW-038

Lab Sample ID: 320-78307-19

No Detections.

## Client Sample ID: PW-040

Lab Sample ID: 320-78307-20

No Detections.

## Client Sample ID: PW-501

Lab Sample ID: 320-78307-21

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.5	J	1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.65	J	1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.42	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.2		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	16		1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-219

Lab Sample ID: 320-78307-22

No Detections.

## Client Sample ID: PW-401

Lab Sample ID: 320-78307-23

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.5	J	1.9	0.56	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.1		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	22		1.9	0.52	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-203

Lab Sample ID: 320-78307-24

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.80	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-012

Lab Sample ID: 320-78307-25

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	2.3		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.3		1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-061

Lab Sample ID: 320-78307-26

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.84	J	1.9	0.56	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.8	J	1.9	0.81	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.38	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.93	J	1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-230

Lab Sample ID: 320-78307-27

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.1	J	1.9	0.81	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.8	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.0		1.9	0.52	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-112

Lab Sample ID: 320-78307-28

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.9		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.2		1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-2001**

**Lab Sample ID: 320-78307-1**

Date Collected: 08/25/21 09:05

Matrix: Water

Date Received: 08/31/21 15:39

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	4.0		1.8	0.53	ng/L		09/02/21 05:50	09/10/21 18:26	1
Perfluoroheptanoic acid (PFHpA)	2.1		1.8	0.23	ng/L		09/02/21 05:50	09/10/21 18:26	1
Perfluorooctanoic acid (PFOA)	3.7		1.8	0.78	ng/L		09/02/21 05:50	09/10/21 18:26	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		09/02/21 05:50	09/10/21 18:26	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		09/02/21 05:50	09/10/21 18:26	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		09/02/21 05:50	09/10/21 18:26	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		09/02/21 05:50	09/10/21 18:26	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/02/21 05:50	09/10/21 18:26	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		09/02/21 05:50	09/10/21 18:26	1
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.8	0.18	ng/L		09/02/21 05:50	09/10/21 18:26	1
Perfluorohexanesulfonic acid (PFHxS)	7.7		1.8	0.52	ng/L		09/02/21 05:50	09/10/21 18:26	1
Perfluorooctanesulfonic acid (PFOS)	7.8		1.8	0.50	ng/L		09/02/21 05:50	09/10/21 18:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/02/21 05:50	09/10/21 18:26	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/02/21 05:50	09/10/21 18:26	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/02/21 05:50	09/10/21 18:26	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/02/21 05:50	09/10/21 18:26	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/02/21 05:50	09/10/21 18:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		09/02/21 05:50	09/10/21 18:26	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	82		50 - 150	09/02/21 05:50	09/10/21 18:26	1
13C4 PFHpA	85		50 - 150	09/02/21 05:50	09/10/21 18:26	1
13C4 PFOA	93		50 - 150	09/02/21 05:50	09/10/21 18:26	1
13C5 PFNA	84		50 - 150	09/02/21 05:50	09/10/21 18:26	1
13C2 PFDA	86		50 - 150	09/02/21 05:50	09/10/21 18:26	1
13C2 PFUnA	83		50 - 150	09/02/21 05:50	09/10/21 18:26	1
13C2 PFDoA	87		50 - 150	09/02/21 05:50	09/10/21 18:26	1
13C2 PFTeDA	81		50 - 150	09/02/21 05:50	09/10/21 18:26	1
13C3 PFBS	82		50 - 150	09/02/21 05:50	09/10/21 18:26	1
18O2 PFHxS	97		50 - 150	09/02/21 05:50	09/10/21 18:26	1
13C4 PFOS	74		50 - 150	09/02/21 05:50	09/10/21 18:26	1
d3-NMeFOSAA	74		50 - 150	09/02/21 05:50	09/10/21 18:26	1
d5-NEtFOSAA	77		50 - 150	09/02/21 05:50	09/10/21 18:26	1
13C3 HFPO-DA	82		50 - 150	09/02/21 05:50	09/10/21 18:26	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-419**

**Lab Sample ID: 320-78307-2**

**Date Collected: 08/25/21 08:10**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		18	5.3	ng/L		09/02/21 05:50	09/14/21 02:23	10
Perfluoroheptanoic acid (PFHpA)	ND		18	2.3	ng/L		09/02/21 05:50	09/14/21 02:23	10
Perfluorooctanoic acid (PFOA)	ND		18	7.8	ng/L		09/02/21 05:50	09/14/21 02:23	10
Perfluorononanoic acid (PFNA)	ND		18	2.5	ng/L		09/02/21 05:50	09/14/21 02:23	10
Perfluorodecanoic acid (PFDA)	ND		18	2.9	ng/L		09/02/21 05:50	09/14/21 02:23	10
Perfluoroundecanoic acid (PFUnA)	ND		18	10	ng/L		09/02/21 05:50	09/14/21 02:23	10
Perfluorododecanoic acid (PFDoA)	ND		18	5.1	ng/L		09/02/21 05:50	09/14/21 02:23	10
Perfluorotridecanoic acid (PFTriA)	ND		18	12	ng/L		09/02/21 05:50	09/14/21 02:23	10
Perfluorotetradecanoic acid (PFTeA)	ND		18	6.7	ng/L		09/02/21 05:50	09/14/21 02:23	10
Perfluorobutanesulfonic acid (PFBS)	ND		18	1.8	ng/L		09/02/21 05:50	09/14/21 02:23	10
Perfluorohexanesulfonic acid (PFHxS)	ND		18	5.3	ng/L		09/02/21 05:50	09/14/21 02:23	10
Perfluorooctanesulfonic acid (PFOS)	ND		18	5.0	ng/L		09/02/21 05:50	09/14/21 02:23	10
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		46	11	ng/L		09/02/21 05:50	09/14/21 02:23	10
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		46	12	ng/L		09/02/21 05:50	09/14/21 02:23	10
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		18	2.2	ng/L		09/02/21 05:50	09/14/21 02:23	10
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		37	14	ng/L		09/02/21 05:50	09/14/21 02:23	10
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		18	3.0	ng/L		09/02/21 05:50	09/14/21 02:23	10
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		18	3.7	ng/L		09/02/21 05:50	09/14/21 02:23	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		50 - 150	09/02/21 05:50	09/14/21 02:23	10
13C4 PFHpA	81		50 - 150	09/02/21 05:50	09/14/21 02:23	10
13C4 PFOA	95		50 - 150	09/02/21 05:50	09/14/21 02:23	10
13C5 PFNA	81		50 - 150	09/02/21 05:50	09/14/21 02:23	10
13C2 PFDA	100		50 - 150	09/02/21 05:50	09/14/21 02:23	10
13C2 PFUnA	89		50 - 150	09/02/21 05:50	09/14/21 02:23	10
13C2 PFDoA	94		50 - 150	09/02/21 05:50	09/14/21 02:23	10
13C2 PFTeDA	89		50 - 150	09/02/21 05:50	09/14/21 02:23	10
13C3 PFBS	81		50 - 150	09/02/21 05:50	09/14/21 02:23	10
18O2 PFHxS	92		50 - 150	09/02/21 05:50	09/14/21 02:23	10
13C4 PFOS	88		50 - 150	09/02/21 05:50	09/14/21 02:23	10
d3-NMeFOSAA	91		50 - 150	09/02/21 05:50	09/14/21 02:23	10
d5-NEtFOSAA	96		50 - 150	09/02/21 05:50	09/14/21 02:23	10
13C3 HFPO-DA	95		50 - 150	09/02/21 05:50	09/14/21 02:23	10

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-467**

**Lab Sample ID: 320-78307-3**

**Date Collected: 08/25/21 07:48**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	9.3		1.9	0.55	ng/L		09/02/21 05:50	09/10/21 18:45	1
Perfluoroheptanoic acid (PFHpA)	3.5		1.9	0.24	ng/L		09/02/21 05:50	09/10/21 18:45	1
Perfluorooctanoic acid (PFOA)	2.5		1.9	0.80	ng/L		09/02/21 05:50	09/10/21 18:45	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		09/02/21 05:50	09/10/21 18:45	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/02/21 05:50	09/10/21 18:45	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/02/21 05:50	09/10/21 18:45	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		09/02/21 05:50	09/10/21 18:45	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/02/21 05:50	09/10/21 18:45	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		09/02/21 05:50	09/10/21 18:45	1
Perfluorobutanesulfonic acid (PFBS)	2.9		1.9	0.19	ng/L		09/02/21 05:50	09/10/21 18:45	1
Perfluorohexanesulfonic acid (PFHxS)	27		1.9	0.54	ng/L		09/02/21 05:50	09/10/21 18:45	1
Perfluorooctanesulfonic acid (PFOS)	69		1.9	0.51	ng/L		09/02/21 05:50	09/10/21 18:45	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		09/02/21 05:50	09/10/21 18:45	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		09/02/21 05:50	09/10/21 18:45	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		09/02/21 05:50	09/10/21 18:45	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		09/02/21 05:50	09/10/21 18:45	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/02/21 05:50	09/10/21 18:45	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		09/02/21 05:50	09/10/21 18:45	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	73		50 - 150	09/02/21 05:50	09/10/21 18:45	1
13C4 PFHpA	66		50 - 150	09/02/21 05:50	09/10/21 18:45	1
13C4 PFOA	94		50 - 150	09/02/21 05:50	09/10/21 18:45	1
13C5 PFNA	73		50 - 150	09/02/21 05:50	09/10/21 18:45	1
13C2 PFDA	86		50 - 150	09/02/21 05:50	09/10/21 18:45	1
13C2 PFUnA	81		50 - 150	09/02/21 05:50	09/10/21 18:45	1
13C2 PFDoA	87		50 - 150	09/02/21 05:50	09/10/21 18:45	1
13C2 PFTeDA	80		50 - 150	09/02/21 05:50	09/10/21 18:45	1
13C3 PFBS	66		50 - 150	09/02/21 05:50	09/10/21 18:45	1
18O2 PFHxS	80		50 - 150	09/02/21 05:50	09/10/21 18:45	1
13C4 PFOS	69		50 - 150	09/02/21 05:50	09/10/21 18:45	1
d3-NMeFOSAA	73		50 - 150	09/02/21 05:50	09/10/21 18:45	1
d5-NEtFOSAA	74		50 - 150	09/02/21 05:50	09/10/21 18:45	1
13C3 HFPO-DA	75		50 - 150	09/02/21 05:50	09/10/21 18:45	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-212**

**Lab Sample ID: 320-78307-4**

**Date Collected: 08/25/21 13:32**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		09/02/21 05:50	09/10/21 18:54	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		09/02/21 05:50	09/10/21 18:54	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		09/02/21 05:50	09/10/21 18:54	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		09/02/21 05:50	09/10/21 18:54	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/02/21 05:50	09/10/21 18:54	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/02/21 05:50	09/10/21 18:54	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		09/02/21 05:50	09/10/21 18:54	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/02/21 05:50	09/10/21 18:54	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		09/02/21 05:50	09/10/21 18:54	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		09/02/21 05:50	09/10/21 18:54	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		09/02/21 05:50	09/10/21 18:54	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		09/02/21 05:50	09/10/21 18:54	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		09/02/21 05:50	09/10/21 18:54	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		09/02/21 05:50	09/10/21 18:54	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		09/02/21 05:50	09/10/21 18:54	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/02/21 05:50	09/10/21 18:54	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/02/21 05:50	09/10/21 18:54	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		09/02/21 05:50	09/10/21 18:54	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	76		50 - 150	09/02/21 05:50	09/10/21 18:54	1
13C4 PFHpA	71		50 - 150	09/02/21 05:50	09/10/21 18:54	1
13C4 PFOA	92		50 - 150	09/02/21 05:50	09/10/21 18:54	1
13C5 PFNA	76		50 - 150	09/02/21 05:50	09/10/21 18:54	1
13C2 PFDA	89		50 - 150	09/02/21 05:50	09/10/21 18:54	1
13C2 PFUnA	78		50 - 150	09/02/21 05:50	09/10/21 18:54	1
13C2 PFDoA	89		50 - 150	09/02/21 05:50	09/10/21 18:54	1
13C2 PFTeDA	83		50 - 150	09/02/21 05:50	09/10/21 18:54	1
13C3 PFBS	71		50 - 150	09/02/21 05:50	09/10/21 18:54	1
18O2 PFHxS	87		50 - 150	09/02/21 05:50	09/10/21 18:54	1
13C4 PFOS	76		50 - 150	09/02/21 05:50	09/10/21 18:54	1
d3-NMeFOSAA	73		50 - 150	09/02/21 05:50	09/10/21 18:54	1
d5-NEtFOSAA	76		50 - 150	09/02/21 05:50	09/10/21 18:54	1
13C3 HFPO-DA	69		50 - 150	09/02/21 05:50	09/10/21 18:54	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: NPSWell**

**Lab Sample ID: 320-78307-5**

Date Collected: 08/25/21 09:15

Matrix: Water

Date Received: 08/31/21 15:39

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	3.7		1.9	0.56	ng/L		09/02/21 05:50	09/10/21 19:04	1
Perfluoroheptanoic acid (PFHpA)	2.1		1.9	0.24	ng/L		09/02/21 05:50	09/10/21 19:04	1
Perfluorooctanoic acid (PFOA)	3.3		1.9	0.83	ng/L		09/02/21 05:50	09/10/21 19:04	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		09/02/21 05:50	09/10/21 19:04	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		09/02/21 05:50	09/10/21 19:04	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		09/02/21 05:50	09/10/21 19:04	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.54	ng/L		09/02/21 05:50	09/10/21 19:04	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		09/02/21 05:50	09/10/21 19:04	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		09/02/21 05:50	09/10/21 19:04	1
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.9	0.19	ng/L		09/02/21 05:50	09/10/21 19:04	1
Perfluorohexanesulfonic acid (PFHxS)	8.2		1.9	0.55	ng/L		09/02/21 05:50	09/10/21 19:04	1
Perfluorooctanesulfonic acid (PFOS)	8.1		1.9	0.53	ng/L		09/02/21 05:50	09/10/21 19:04	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		09/02/21 05:50	09/10/21 19:04	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		09/02/21 05:50	09/10/21 19:04	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		09/02/21 05:50	09/10/21 19:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		09/02/21 05:50	09/10/21 19:04	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		09/02/21 05:50	09/10/21 19:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		09/02/21 05:50	09/10/21 19:04	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	80		50 - 150	09/02/21 05:50	09/10/21 19:04	1
13C4 PFHpA	77		50 - 150	09/02/21 05:50	09/10/21 19:04	1
13C4 PFOA	95		50 - 150	09/02/21 05:50	09/10/21 19:04	1
13C5 PFNA	78		50 - 150	09/02/21 05:50	09/10/21 19:04	1
13C2 PFDA	88		50 - 150	09/02/21 05:50	09/10/21 19:04	1
13C2 PFUnA	81		50 - 150	09/02/21 05:50	09/10/21 19:04	1
13C2 PFDoA	83		50 - 150	09/02/21 05:50	09/10/21 19:04	1
13C2 PFTeDA	79		50 - 150	09/02/21 05:50	09/10/21 19:04	1
13C3 PFBS	72		50 - 150	09/02/21 05:50	09/10/21 19:04	1
18O2 PFHxS	90		50 - 150	09/02/21 05:50	09/10/21 19:04	1
13C4 PFOS	72		50 - 150	09/02/21 05:50	09/10/21 19:04	1
d3-NMeFOSAA	70		50 - 150	09/02/21 05:50	09/10/21 19:04	1
d5-NEtFOSAA	75		50 - 150	09/02/21 05:50	09/10/21 19:04	1
13C3 HFPO-DA	79		50 - 150	09/02/21 05:50	09/10/21 19:04	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-010**

**Lab Sample ID: 320-78307-6**

**Date Collected: 08/24/21 12:16**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		09/02/21 05:50	09/10/21 19:32	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		09/02/21 05:50	09/10/21 19:32	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		09/02/21 05:50	09/10/21 19:32	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		09/02/21 05:50	09/10/21 19:32	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/02/21 05:50	09/10/21 19:32	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/02/21 05:50	09/10/21 19:32	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		09/02/21 05:50	09/10/21 19:32	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/02/21 05:50	09/10/21 19:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		09/02/21 05:50	09/10/21 19:32	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		09/02/21 05:50	09/10/21 19:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		09/02/21 05:50	09/10/21 19:32	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		09/02/21 05:50	09/10/21 19:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		09/02/21 05:50	09/10/21 19:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		09/02/21 05:50	09/10/21 19:32	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		09/02/21 05:50	09/10/21 19:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/02/21 05:50	09/10/21 19:32	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/02/21 05:50	09/10/21 19:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		09/02/21 05:50	09/10/21 19:32	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	80		50 - 150	09/02/21 05:50	09/10/21 19:32	1
13C4 PFHpA	77		50 - 150	09/02/21 05:50	09/10/21 19:32	1
13C4 PFOA	91		50 - 150	09/02/21 05:50	09/10/21 19:32	1
13C5 PFNA	75		50 - 150	09/02/21 05:50	09/10/21 19:32	1
13C2 PFDA	87		50 - 150	09/02/21 05:50	09/10/21 19:32	1
13C2 PFUnA	82		50 - 150	09/02/21 05:50	09/10/21 19:32	1
13C2 PFDoA	85		50 - 150	09/02/21 05:50	09/10/21 19:32	1
13C2 PFTeDA	87		50 - 150	09/02/21 05:50	09/10/21 19:32	1
13C3 PFBS	68		50 - 150	09/02/21 05:50	09/10/21 19:32	1
18O2 PFHxS	89		50 - 150	09/02/21 05:50	09/10/21 19:32	1
13C4 PFOS	74		50 - 150	09/02/21 05:50	09/10/21 19:32	1
d3-NMeFOSAA	73		50 - 150	09/02/21 05:50	09/10/21 19:32	1
d5-NEtFOSAA	76		50 - 150	09/02/21 05:50	09/10/21 19:32	1
13C3 HFPO-DA	79		50 - 150	09/02/21 05:50	09/10/21 19:32	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-221**

**Lab Sample ID: 320-78307-7**

**Date Collected: 08/24/21 11:48**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		09/02/21 05:50	09/10/21 19:41	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		09/02/21 05:50	09/10/21 19:41	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		09/02/21 05:50	09/10/21 19:41	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		09/02/21 05:50	09/10/21 19:41	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/02/21 05:50	09/10/21 19:41	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		09/02/21 05:50	09/10/21 19:41	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		09/02/21 05:50	09/10/21 19:41	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/02/21 05:50	09/10/21 19:41	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		09/02/21 05:50	09/10/21 19:41	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		09/02/21 05:50	09/10/21 19:41	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		09/02/21 05:50	09/10/21 19:41	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>1.0</b>	<b>J</b>	1.8	0.49	ng/L		09/02/21 05:50	09/10/21 19:41	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/02/21 05:50	09/10/21 19:41	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/02/21 05:50	09/10/21 19:41	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/02/21 05:50	09/10/21 19:41	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/02/21 05:50	09/10/21 19:41	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/02/21 05:50	09/10/21 19:41	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		09/02/21 05:50	09/10/21 19:41	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	81		50 - 150	09/02/21 05:50	09/10/21 19:41	1
13C4 PFHpA	80		50 - 150	09/02/21 05:50	09/10/21 19:41	1
13C4 PFOA	96		50 - 150	09/02/21 05:50	09/10/21 19:41	1
13C5 PFNA	81		50 - 150	09/02/21 05:50	09/10/21 19:41	1
13C2 PFDA	91		50 - 150	09/02/21 05:50	09/10/21 19:41	1
13C2 PFUnA	88		50 - 150	09/02/21 05:50	09/10/21 19:41	1
13C2 PFDoA	91		50 - 150	09/02/21 05:50	09/10/21 19:41	1
13C2 PFTeDA	78		50 - 150	09/02/21 05:50	09/10/21 19:41	1
13C3 PFBS	74		50 - 150	09/02/21 05:50	09/10/21 19:41	1
18O2 PFHxS	91		50 - 150	09/02/21 05:50	09/10/21 19:41	1
13C4 PFOS	83		50 - 150	09/02/21 05:50	09/10/21 19:41	1
d3-NMeFOSAA	74		50 - 150	09/02/21 05:50	09/10/21 19:41	1
d5-NEtFOSAA	85		50 - 150	09/02/21 05:50	09/10/21 19:41	1
13C3 HFPO-DA	80		50 - 150	09/02/21 05:50	09/10/21 19:41	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-304.1**

**Lab Sample ID: 320-78307-8**

Date Collected: 08/24/21 10:26

Matrix: Water

Date Received: 08/31/21 15:39

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	7.2		1.9	0.56	ng/L		09/02/21 05:50	09/10/21 19:51	1
Perfluoroheptanoic acid (PFHpA)	3.1		1.9	0.24	ng/L		09/02/21 05:50	09/10/21 19:51	1
Perfluorooctanoic acid (PFOA)	2.5		1.9	0.82	ng/L		09/02/21 05:50	09/10/21 19:51	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		09/02/21 05:50	09/10/21 19:51	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		09/02/21 05:50	09/10/21 19:51	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		09/02/21 05:50	09/10/21 19:51	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		09/02/21 05:50	09/10/21 19:51	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		09/02/21 05:50	09/10/21 19:51	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		09/02/21 05:50	09/10/21 19:51	1
Perfluorobutanesulfonic acid (PFBS)	2.8		1.9	0.19	ng/L		09/02/21 05:50	09/10/21 19:51	1
Perfluorohexanesulfonic acid (PFHxS)	25		1.9	0.55	ng/L		09/02/21 05:50	09/10/21 19:51	1
Perfluorooctanesulfonic acid (PFOS)	39		1.9	0.52	ng/L		09/02/21 05:50	09/10/21 19:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		09/02/21 05:50	09/10/21 19:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.3	ng/L		09/02/21 05:50	09/10/21 19:51	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		09/02/21 05:50	09/10/21 19:51	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.4	ng/L		09/02/21 05:50	09/10/21 19:51	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		09/02/21 05:50	09/10/21 19:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		09/02/21 05:50	09/10/21 19:51	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	80		50 - 150	09/02/21 05:50	09/10/21 19:51	1
13C4 PFHpA	72		50 - 150	09/02/21 05:50	09/10/21 19:51	1
13C4 PFOA	97		50 - 150	09/02/21 05:50	09/10/21 19:51	1
13C5 PFNA	75		50 - 150	09/02/21 05:50	09/10/21 19:51	1
13C2 PFDA	85		50 - 150	09/02/21 05:50	09/10/21 19:51	1
13C2 PFUnA	85		50 - 150	09/02/21 05:50	09/10/21 19:51	1
13C2 PFDoA	92		50 - 150	09/02/21 05:50	09/10/21 19:51	1
13C2 PFTeDA	91		50 - 150	09/02/21 05:50	09/10/21 19:51	1
13C3 PFBS	67		50 - 150	09/02/21 05:50	09/10/21 19:51	1
18O2 PFHxS	88		50 - 150	09/02/21 05:50	09/10/21 19:51	1
13C4 PFOS	76		50 - 150	09/02/21 05:50	09/10/21 19:51	1
d3-NMeFOSAA	70		50 - 150	09/02/21 05:50	09/10/21 19:51	1
d5-NEtFOSAA	81		50 - 150	09/02/21 05:50	09/10/21 19:51	1
13C3 HFPO-DA	77		50 - 150	09/02/21 05:50	09/10/21 19:51	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-032**

**Lab Sample ID: 320-78307-9**

**Date Collected: 08/24/21 16:16**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		09/02/21 05:50	09/10/21 20:00	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		09/02/21 05:50	09/10/21 20:00	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		09/02/21 05:50	09/10/21 20:00	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		09/02/21 05:50	09/10/21 20:00	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/02/21 05:50	09/10/21 20:00	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/02/21 05:50	09/10/21 20:00	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		09/02/21 05:50	09/10/21 20:00	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/02/21 05:50	09/10/21 20:00	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		09/02/21 05:50	09/10/21 20:00	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		09/02/21 05:50	09/10/21 20:00	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.54	ng/L		09/02/21 05:50	09/10/21 20:00	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		09/02/21 05:50	09/10/21 20:00	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		09/02/21 05:50	09/10/21 20:00	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		09/02/21 05:50	09/10/21 20:00	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		09/02/21 05:50	09/10/21 20:00	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		09/02/21 05:50	09/10/21 20:00	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/02/21 05:50	09/10/21 20:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		09/02/21 05:50	09/10/21 20:00	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	77		50 - 150	09/02/21 05:50	09/10/21 20:00	1
13C4 PFHpA	65		50 - 150	09/02/21 05:50	09/10/21 20:00	1
13C4 PFOA	99		50 - 150	09/02/21 05:50	09/10/21 20:00	1
13C5 PFNA	74		50 - 150	09/02/21 05:50	09/10/21 20:00	1
13C2 PFDA	89		50 - 150	09/02/21 05:50	09/10/21 20:00	1
13C2 PFUnA	79		50 - 150	09/02/21 05:50	09/10/21 20:00	1
13C2 PFDoA	94		50 - 150	09/02/21 05:50	09/10/21 20:00	1
13C2 PFTeDA	84		50 - 150	09/02/21 05:50	09/10/21 20:00	1
13C3 PFBS	63		50 - 150	09/02/21 05:50	09/10/21 20:00	1
18O2 PFHxS	86		50 - 150	09/02/21 05:50	09/10/21 20:00	1
13C4 PFOS	77		50 - 150	09/02/21 05:50	09/10/21 20:00	1
d3-NMeFOSAA	69		50 - 150	09/02/21 05:50	09/10/21 20:00	1
d5-NEtFOSAA	74		50 - 150	09/02/21 05:50	09/10/21 20:00	1
13C3 HFPO-DA	78		50 - 150	09/02/21 05:50	09/10/21 20:00	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-204.1**

**Lab Sample ID: 320-78307-10**

Date Collected: 08/24/21 10:36

Matrix: Water

Date Received: 08/31/21 15:39

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	8.0		1.9	0.56	ng/L		09/02/21 05:50	09/10/21 20:09	1
Perfluoroheptanoic acid (PFHpA)	2.7		1.9	0.24	ng/L		09/02/21 05:50	09/10/21 20:09	1
Perfluorooctanoic acid (PFOA)	2.4		1.9	0.82	ng/L		09/02/21 05:50	09/10/21 20:09	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		09/02/21 05:50	09/10/21 20:09	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		09/02/21 05:50	09/10/21 20:09	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		09/02/21 05:50	09/10/21 20:09	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		09/02/21 05:50	09/10/21 20:09	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		09/02/21 05:50	09/10/21 20:09	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		09/02/21 05:50	09/10/21 20:09	1
Perfluorobutanesulfonic acid (PFBS)	2.2		1.9	0.19	ng/L		09/02/21 05:50	09/10/21 20:09	1
Perfluorohexanesulfonic acid (PFHxS)	25		1.9	0.55	ng/L		09/02/21 05:50	09/10/21 20:09	1
Perfluorooctanesulfonic acid (PFOS)	44		1.9	0.52	ng/L		09/02/21 05:50	09/10/21 20:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		09/02/21 05:50	09/10/21 20:09	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.3	ng/L		09/02/21 05:50	09/10/21 20:09	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		09/02/21 05:50	09/10/21 20:09	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		09/02/21 05:50	09/10/21 20:09	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		09/02/21 05:50	09/10/21 20:09	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		09/02/21 05:50	09/10/21 20:09	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	77		50 - 150	09/02/21 05:50	09/10/21 20:09	1
13C4 PFHpA	66		50 - 150	09/02/21 05:50	09/10/21 20:09	1
13C4 PFOA	95		50 - 150	09/02/21 05:50	09/10/21 20:09	1
13C5 PFNA	72		50 - 150	09/02/21 05:50	09/10/21 20:09	1
13C2 PFDA	90		50 - 150	09/02/21 05:50	09/10/21 20:09	1
13C2 PFUnA	78		50 - 150	09/02/21 05:50	09/10/21 20:09	1
13C2 PFDoA	87		50 - 150	09/02/21 05:50	09/10/21 20:09	1
13C2 PFTeDA	83		50 - 150	09/02/21 05:50	09/10/21 20:09	1
13C3 PFBS	70		50 - 150	09/02/21 05:50	09/10/21 20:09	1
18O2 PFHxS	84		50 - 150	09/02/21 05:50	09/10/21 20:09	1
13C4 PFOS	68		50 - 150	09/02/21 05:50	09/10/21 20:09	1
d3-NMeFOSAA	69		50 - 150	09/02/21 05:50	09/10/21 20:09	1
d5-NEtFOSAA	71		50 - 150	09/02/21 05:50	09/10/21 20:09	1
13C3 HFPO-DA	76		50 - 150	09/02/21 05:50	09/10/21 20:09	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-207**

**Lab Sample ID: 320-78307-11**

**Date Collected: 08/24/21 09:35**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		09/02/21 05:50	09/10/21 20:19	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		09/02/21 05:50	09/10/21 20:19	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>0.89</b>	<b>J</b>	1.9	0.79	ng/L		09/02/21 05:50	09/10/21 20:19	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		09/02/21 05:50	09/10/21 20:19	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/02/21 05:50	09/10/21 20:19	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/02/21 05:50	09/10/21 20:19	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		09/02/21 05:50	09/10/21 20:19	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/02/21 05:50	09/10/21 20:19	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		09/02/21 05:50	09/10/21 20:19	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.66</b>	<b>J</b>	1.9	0.19	ng/L		09/02/21 05:50	09/10/21 20:19	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.95</b>	<b>J</b>	1.9	0.53	ng/L		09/02/21 05:50	09/10/21 20:19	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		09/02/21 05:50	09/10/21 20:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/02/21 05:50	09/10/21 20:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/02/21 05:50	09/10/21 20:19	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		09/02/21 05:50	09/10/21 20:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/02/21 05:50	09/10/21 20:19	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/02/21 05:50	09/10/21 20:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		09/02/21 05:50	09/10/21 20:19	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	77		50 - 150	09/02/21 05:50	09/10/21 20:19	1
13C4 PFHpA	68		50 - 150	09/02/21 05:50	09/10/21 20:19	1
13C4 PFOA	96		50 - 150	09/02/21 05:50	09/10/21 20:19	1
13C5 PFNA	80		50 - 150	09/02/21 05:50	09/10/21 20:19	1
13C2 PFDA	86		50 - 150	09/02/21 05:50	09/10/21 20:19	1
13C2 PFUnA	77		50 - 150	09/02/21 05:50	09/10/21 20:19	1
13C2 PFDoA	87		50 - 150	09/02/21 05:50	09/10/21 20:19	1
13C2 PFTeDA	87		50 - 150	09/02/21 05:50	09/10/21 20:19	1
13C3 PFBS	78		50 - 150	09/02/21 05:50	09/10/21 20:19	1
18O2 PFHxS	92		50 - 150	09/02/21 05:50	09/10/21 20:19	1
13C4 PFOS	73		50 - 150	09/02/21 05:50	09/10/21 20:19	1
d3-NMeFOSAA	76		50 - 150	09/02/21 05:50	09/10/21 20:19	1
d5-NEtFOSAA	80		50 - 150	09/02/21 05:50	09/10/21 20:19	1
13C3 HFPO-DA	86		50 - 150	09/02/21 05:50	09/10/21 20:19	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-205**

**Lab Sample ID: 320-78307-12**

**Date Collected: 08/24/21 12:55**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		09/02/21 05:50	09/10/21 20:28	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		09/02/21 05:50	09/10/21 20:28	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		09/02/21 05:50	09/10/21 20:28	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		09/02/21 05:50	09/10/21 20:28	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/02/21 05:50	09/10/21 20:28	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/02/21 05:50	09/10/21 20:28	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		09/02/21 05:50	09/10/21 20:28	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/02/21 05:50	09/10/21 20:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		09/02/21 05:50	09/10/21 20:28	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		09/02/21 05:50	09/10/21 20:28	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>1.0</b>	<b>J</b>	1.9	0.53	ng/L		09/02/21 05:50	09/10/21 20:28	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		09/02/21 05:50	09/10/21 20:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		09/02/21 05:50	09/10/21 20:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		09/02/21 05:50	09/10/21 20:28	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		09/02/21 05:50	09/10/21 20:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/02/21 05:50	09/10/21 20:28	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/02/21 05:50	09/10/21 20:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		09/02/21 05:50	09/10/21 20:28	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	76		50 - 150	09/02/21 05:50	09/10/21 20:28	1
13C4 PFHpA	72		50 - 150	09/02/21 05:50	09/10/21 20:28	1
13C4 PFOA	93		50 - 150	09/02/21 05:50	09/10/21 20:28	1
13C5 PFNA	77		50 - 150	09/02/21 05:50	09/10/21 20:28	1
13C2 PFDA	87		50 - 150	09/02/21 05:50	09/10/21 20:28	1
13C2 PFUnA	79		50 - 150	09/02/21 05:50	09/10/21 20:28	1
13C2 PFDoA	86		50 - 150	09/02/21 05:50	09/10/21 20:28	1
13C2 PFTeDA	83		50 - 150	09/02/21 05:50	09/10/21 20:28	1
13C3 PFBS	72		50 - 150	09/02/21 05:50	09/10/21 20:28	1
18O2 PFHxS	91		50 - 150	09/02/21 05:50	09/10/21 20:28	1
13C4 PFOS	73		50 - 150	09/02/21 05:50	09/10/21 20:28	1
d3-NMeFOSAA	67		50 - 150	09/02/21 05:50	09/10/21 20:28	1
d5-NEtFOSAA	73		50 - 150	09/02/21 05:50	09/10/21 20:28	1
13C3 HFPO-DA	66		50 - 150	09/02/21 05:50	09/10/21 20:28	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-240**

**Lab Sample ID: 320-78307-13**

**Date Collected: 08/24/21 11:13**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		09/03/21 04:55	09/10/21 11:51	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		09/03/21 04:55	09/10/21 11:51	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		09/03/21 04:55	09/10/21 11:51	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		09/03/21 04:55	09/10/21 11:51	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		09/03/21 04:55	09/10/21 11:51	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		09/03/21 04:55	09/10/21 11:51	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		09/03/21 04:55	09/10/21 11:51	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		09/03/21 04:55	09/10/21 11:51	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		09/03/21 04:55	09/10/21 11:51	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		09/03/21 04:55	09/10/21 11:51	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>1.7</b>	<b>J</b>	2.0	0.57	ng/L		09/03/21 04:55	09/10/21 11:51	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		09/03/21 04:55	09/10/21 11:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		09/03/21 04:55	09/10/21 11:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		09/03/21 04:55	09/10/21 11:51	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		09/03/21 04:55	09/10/21 11:51	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		09/03/21 04:55	09/10/21 11:51	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		09/03/21 04:55	09/10/21 11:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		09/03/21 04:55	09/10/21 11:51	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	79		50 - 150	09/03/21 04:55	09/10/21 11:51	1
13C4 PFHpA	73		50 - 150	09/03/21 04:55	09/10/21 11:51	1
13C4 PFOA	93		50 - 150	09/03/21 04:55	09/10/21 11:51	1
13C5 PFNA	75		50 - 150	09/03/21 04:55	09/10/21 11:51	1
13C2 PFDA	92		50 - 150	09/03/21 04:55	09/10/21 11:51	1
13C2 PFUnA	87		50 - 150	09/03/21 04:55	09/10/21 11:51	1
13C2 PFDoA	94		50 - 150	09/03/21 04:55	09/10/21 11:51	1
13C2 PFTeDA	91		50 - 150	09/03/21 04:55	09/10/21 11:51	1
13C3 PFBS	70		50 - 150	09/03/21 04:55	09/10/21 11:51	1
18O2 PFHxS	94		50 - 150	09/03/21 04:55	09/10/21 11:51	1
13C4 PFOS	82		50 - 150	09/03/21 04:55	09/10/21 11:51	1
d3-NMeFOSAA	74		50 - 150	09/03/21 04:55	09/10/21 11:51	1
d5-NEtFOSAA	82		50 - 150	09/03/21 04:55	09/10/21 11:51	1
13C3 HFPO-DA	77		50 - 150	09/03/21 04:55	09/10/21 11:51	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-039**

**Lab Sample ID: 320-78307-14**

**Date Collected: 08/23/21 14:40**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		09/03/21 04:55	09/10/21 12:01	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		09/03/21 04:55	09/10/21 12:01	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		09/03/21 04:55	09/10/21 12:01	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		09/03/21 04:55	09/10/21 12:01	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/03/21 04:55	09/10/21 12:01	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/03/21 04:55	09/10/21 12:01	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		09/03/21 04:55	09/10/21 12:01	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/03/21 04:55	09/10/21 12:01	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		09/03/21 04:55	09/10/21 12:01	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		09/03/21 04:55	09/10/21 12:01	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		09/03/21 04:55	09/10/21 12:01	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		09/03/21 04:55	09/10/21 12:01	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		09/03/21 04:55	09/10/21 12:01	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		09/03/21 04:55	09/10/21 12:01	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		09/03/21 04:55	09/10/21 12:01	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/03/21 04:55	09/10/21 12:01	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/03/21 04:55	09/10/21 12:01	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		09/03/21 04:55	09/10/21 12:01	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	67		50 - 150	09/03/21 04:55	09/10/21 12:01	1
13C4 PFHpA	65		50 - 150	09/03/21 04:55	09/10/21 12:01	1
13C4 PFOA	84		50 - 150	09/03/21 04:55	09/10/21 12:01	1
13C5 PFNA	66		50 - 150	09/03/21 04:55	09/10/21 12:01	1
13C2 PFDA	79		50 - 150	09/03/21 04:55	09/10/21 12:01	1
13C2 PFUnA	75		50 - 150	09/03/21 04:55	09/10/21 12:01	1
13C2 PFDoA	84		50 - 150	09/03/21 04:55	09/10/21 12:01	1
13C2 PFTeDA	83		50 - 150	09/03/21 04:55	09/10/21 12:01	1
13C3 PFBS	64		50 - 150	09/03/21 04:55	09/10/21 12:01	1
18O2 PFHxS	79		50 - 150	09/03/21 04:55	09/10/21 12:01	1
13C4 PFOS	70		50 - 150	09/03/21 04:55	09/10/21 12:01	1
d3-NMeFOSAA	64		50 - 150	09/03/21 04:55	09/10/21 12:01	1
d5-NEtFOSAA	71		50 - 150	09/03/21 04:55	09/10/21 12:01	1
13C3 HFPO-DA	72		50 - 150	09/03/21 04:55	09/10/21 12:01	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-438**

**Lab Sample ID: 320-78307-15**

**Date Collected: 08/23/21 15:39**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.56	ng/L		09/03/21 04:55	09/10/21 12:10	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		09/03/21 04:55	09/10/21 12:10	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		09/03/21 04:55	09/10/21 12:10	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		09/03/21 04:55	09/10/21 12:10	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		09/03/21 04:55	09/10/21 12:10	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		09/03/21 04:55	09/10/21 12:10	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		09/03/21 04:55	09/10/21 12:10	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		09/03/21 04:55	09/10/21 12:10	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		09/03/21 04:55	09/10/21 12:10	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>1.0</b>	<b>J</b>	1.9	0.19	ng/L		09/03/21 04:55	09/10/21 12:10	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>2.4</b>		1.9	0.55	ng/L		09/03/21 04:55	09/10/21 12:10	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>3.8</b>		1.9	0.52	ng/L		09/03/21 04:55	09/10/21 12:10	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		09/03/21 04:55	09/10/21 12:10	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.3	ng/L		09/03/21 04:55	09/10/21 12:10	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		09/03/21 04:55	09/10/21 12:10	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.4	ng/L		09/03/21 04:55	09/10/21 12:10	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		09/03/21 04:55	09/10/21 12:10	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		09/03/21 04:55	09/10/21 12:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	70		50 - 150	09/03/21 04:55	09/10/21 12:10	1
13C4 PFHpA	63		50 - 150	09/03/21 04:55	09/10/21 12:10	1
13C4 PFOA	89		50 - 150	09/03/21 04:55	09/10/21 12:10	1
13C5 PFNA	70		50 - 150	09/03/21 04:55	09/10/21 12:10	1
13C2 PFDA	85		50 - 150	09/03/21 04:55	09/10/21 12:10	1
13C2 PFUnA	81		50 - 150	09/03/21 04:55	09/10/21 12:10	1
13C2 PFDoA	89		50 - 150	09/03/21 04:55	09/10/21 12:10	1
13C2 PFTeDA	93		50 - 150	09/03/21 04:55	09/10/21 12:10	1
13C3 PFBS	61		50 - 150	09/03/21 04:55	09/10/21 12:10	1
18O2 PFHxS	85		50 - 150	09/03/21 04:55	09/10/21 12:10	1
13C4 PFOS	74		50 - 150	09/03/21 04:55	09/10/21 12:10	1
d3-NMeFOSAA	66		50 - 150	09/03/21 04:55	09/10/21 12:10	1
d5-NEtFOSAA	76		50 - 150	09/03/21 04:55	09/10/21 12:10	1
13C3 HFPO-DA	67		50 - 150	09/03/21 04:55	09/10/21 12:10	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-059**

**Lab Sample ID: 320-78307-16**

**Date Collected: 08/23/21 08:36**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		09/03/21 04:55	09/10/21 12:19	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		09/03/21 04:55	09/10/21 12:19	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>0.85</b>	<b>J I</b>	2.0	0.84	ng/L		09/03/21 04:55	09/10/21 12:19	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		09/03/21 04:55	09/10/21 12:19	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		09/03/21 04:55	09/10/21 12:19	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		09/03/21 04:55	09/10/21 12:19	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		09/03/21 04:55	09/10/21 12:19	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		09/03/21 04:55	09/10/21 12:19	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.72	ng/L		09/03/21 04:55	09/10/21 12:19	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		09/03/21 04:55	09/10/21 12:19	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>1.5</b>	<b>J</b>	2.0	0.57	ng/L		09/03/21 04:55	09/10/21 12:19	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		09/03/21 04:55	09/10/21 12:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		09/03/21 04:55	09/10/21 12:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		09/03/21 04:55	09/10/21 12:19	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		09/03/21 04:55	09/10/21 12:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		09/03/21 04:55	09/10/21 12:19	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		09/03/21 04:55	09/10/21 12:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		09/03/21 04:55	09/10/21 12:19	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	73		50 - 150	09/03/21 04:55	09/10/21 12:19	1
13C4 PFHpA	64		50 - 150	09/03/21 04:55	09/10/21 12:19	1
13C4 PFOA	88		50 - 150	09/03/21 04:55	09/10/21 12:19	1
13C5 PFNA	67		50 - 150	09/03/21 04:55	09/10/21 12:19	1
13C2 PFDA	81		50 - 150	09/03/21 04:55	09/10/21 12:19	1
13C2 PFUnA	73		50 - 150	09/03/21 04:55	09/10/21 12:19	1
13C2 PFDoA	82		50 - 150	09/03/21 04:55	09/10/21 12:19	1
13C2 PFTeDA	84		50 - 150	09/03/21 04:55	09/10/21 12:19	1
13C3 PFBS	68		50 - 150	09/03/21 04:55	09/10/21 12:19	1
18O2 PFHxS	80		50 - 150	09/03/21 04:55	09/10/21 12:19	1
13C4 PFOS	68		50 - 150	09/03/21 04:55	09/10/21 12:19	1
d3-NMeFOSAA	61		50 - 150	09/03/21 04:55	09/10/21 12:19	1
d5-NEtFOSAA	70		50 - 150	09/03/21 04:55	09/10/21 12:19	1
13C3 HFPO-DA	74		50 - 150	09/03/21 04:55	09/10/21 12:19	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-037**

**Lab Sample ID: 320-78307-17**

**Date Collected: 08/23/21 14:04**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.57	ng/L		09/03/21 04:55	09/10/21 12:29	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.24	ng/L		09/03/21 04:55	09/10/21 12:29	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.83	ng/L		09/03/21 04:55	09/10/21 12:29	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.26	ng/L		09/03/21 04:55	09/10/21 12:29	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.30	ng/L		09/03/21 04:55	09/10/21 12:29	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		09/03/21 04:55	09/10/21 12:29	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		09/03/21 04:55	09/10/21 12:29	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		09/03/21 04:55	09/10/21 12:29	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.71	ng/L		09/03/21 04:55	09/10/21 12:29	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		09/03/21 04:55	09/10/21 12:29	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.56	ng/L		09/03/21 04:55	09/10/21 12:29	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.53	ng/L		09/03/21 04:55	09/10/21 12:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		09/03/21 04:55	09/10/21 12:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		09/03/21 04:55	09/10/21 12:29	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.23	ng/L		09/03/21 04:55	09/10/21 12:29	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		09/03/21 04:55	09/10/21 12:29	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.31	ng/L		09/03/21 04:55	09/10/21 12:29	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		09/03/21 04:55	09/10/21 12:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	69		50 - 150	09/03/21 04:55	09/10/21 12:29	1
13C4 PFHpA	68		50 - 150	09/03/21 04:55	09/10/21 12:29	1
13C4 PFOA	88		50 - 150	09/03/21 04:55	09/10/21 12:29	1
13C5 PFNA	66		50 - 150	09/03/21 04:55	09/10/21 12:29	1
13C2 PFDA	84		50 - 150	09/03/21 04:55	09/10/21 12:29	1
13C2 PFUnA	80		50 - 150	09/03/21 04:55	09/10/21 12:29	1
13C2 PFDoA	83		50 - 150	09/03/21 04:55	09/10/21 12:29	1
13C2 PFTeDA	79		50 - 150	09/03/21 04:55	09/10/21 12:29	1
13C3 PFBS	64		50 - 150	09/03/21 04:55	09/10/21 12:29	1
18O2 PFHxS	85		50 - 150	09/03/21 04:55	09/10/21 12:29	1
13C4 PFOS	76		50 - 150	09/03/21 04:55	09/10/21 12:29	1
d3-NMeFOSAA	66		50 - 150	09/03/21 04:55	09/10/21 12:29	1
d5-NEtFOSAA	73		50 - 150	09/03/21 04:55	09/10/21 12:29	1
13C3 HFPO-DA	76		50 - 150	09/03/21 04:55	09/10/21 12:29	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-211**

**Lab Sample ID: 320-78307-18**

**Date Collected: 08/23/21 09:37**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		09/03/21 04:55	09/10/21 12:38	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		09/03/21 04:55	09/10/21 12:38	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		09/03/21 04:55	09/10/21 12:38	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		09/03/21 04:55	09/10/21 12:38	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		09/03/21 04:55	09/10/21 12:38	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		09/03/21 04:55	09/10/21 12:38	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		09/03/21 04:55	09/10/21 12:38	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/03/21 04:55	09/10/21 12:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		09/03/21 04:55	09/10/21 12:38	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.45</b>	<b>J</b>	1.9	0.19	ng/L		09/03/21 04:55	09/10/21 12:38	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.83</b>	<b>J</b>	1.9	0.55	ng/L		09/03/21 04:55	09/10/21 12:38	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		09/03/21 04:55	09/10/21 12:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		09/03/21 04:55	09/10/21 12:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		09/03/21 04:55	09/10/21 12:38	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		09/03/21 04:55	09/10/21 12:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		09/03/21 04:55	09/10/21 12:38	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		09/03/21 04:55	09/10/21 12:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		09/03/21 04:55	09/10/21 12:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	73		50 - 150	09/03/21 04:55	09/10/21 12:38	1
13C4 PFHpA	66		50 - 150	09/03/21 04:55	09/10/21 12:38	1
13C4 PFOA	86		50 - 150	09/03/21 04:55	09/10/21 12:38	1
13C5 PFNA	68		50 - 150	09/03/21 04:55	09/10/21 12:38	1
13C2 PFDA	85		50 - 150	09/03/21 04:55	09/10/21 12:38	1
13C2 PFUnA	76		50 - 150	09/03/21 04:55	09/10/21 12:38	1
13C2 PFDoA	82		50 - 150	09/03/21 04:55	09/10/21 12:38	1
13C2 PFTeDA	82		50 - 150	09/03/21 04:55	09/10/21 12:38	1
13C3 PFBS	68		50 - 150	09/03/21 04:55	09/10/21 12:38	1
18O2 PFHxS	80		50 - 150	09/03/21 04:55	09/10/21 12:38	1
13C4 PFOS	74		50 - 150	09/03/21 04:55	09/10/21 12:38	1
d3-NMeFOSAA	72		50 - 150	09/03/21 04:55	09/10/21 12:38	1
d5-NEtFOSAA	70		50 - 150	09/03/21 04:55	09/10/21 12:38	1
13C3 HFPO-DA	75		50 - 150	09/03/21 04:55	09/10/21 12:38	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-038**

**Lab Sample ID: 320-78307-19**

**Date Collected: 08/23/21 13:18**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.56	ng/L		09/03/21 04:55	09/10/21 12:48	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		09/03/21 04:55	09/10/21 12:48	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		09/03/21 04:55	09/10/21 12:48	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		09/03/21 04:55	09/10/21 12:48	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		09/03/21 04:55	09/10/21 12:48	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		09/03/21 04:55	09/10/21 12:48	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		09/03/21 04:55	09/10/21 12:48	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		09/03/21 04:55	09/10/21 12:48	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		09/03/21 04:55	09/10/21 12:48	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		09/03/21 04:55	09/10/21 12:48	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.55	ng/L		09/03/21 04:55	09/10/21 12:48	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		09/03/21 04:55	09/10/21 12:48	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		09/03/21 04:55	09/10/21 12:48	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.3	ng/L		09/03/21 04:55	09/10/21 12:48	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		09/03/21 04:55	09/10/21 12:48	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		09/03/21 04:55	09/10/21 12:48	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		09/03/21 04:55	09/10/21 12:48	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		09/03/21 04:55	09/10/21 12:48	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	72		50 - 150	09/03/21 04:55	09/10/21 12:48	1
13C4 PFHpA	70		50 - 150	09/03/21 04:55	09/10/21 12:48	1
13C4 PFOA	91		50 - 150	09/03/21 04:55	09/10/21 12:48	1
13C5 PFNA	72		50 - 150	09/03/21 04:55	09/10/21 12:48	1
13C2 PFDA	92		50 - 150	09/03/21 04:55	09/10/21 12:48	1
13C2 PFUnA	88		50 - 150	09/03/21 04:55	09/10/21 12:48	1
13C2 PFDoA	90		50 - 150	09/03/21 04:55	09/10/21 12:48	1
13C2 PFTeDA	92		50 - 150	09/03/21 04:55	09/10/21 12:48	1
13C3 PFBS	69		50 - 150	09/03/21 04:55	09/10/21 12:48	1
18O2 PFHxS	86		50 - 150	09/03/21 04:55	09/10/21 12:48	1
13C4 PFOS	79		50 - 150	09/03/21 04:55	09/10/21 12:48	1
d3-NMeFOSAA	72		50 - 150	09/03/21 04:55	09/10/21 12:48	1
d5-NEtFOSAA	77		50 - 150	09/03/21 04:55	09/10/21 12:48	1
13C3 HFPO-DA	70		50 - 150	09/03/21 04:55	09/10/21 12:48	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-040**

**Lab Sample ID: 320-78307-20**

**Date Collected: 08/23/21 12:30**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		09/03/21 04:55	09/10/21 15:18	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		09/03/21 04:55	09/10/21 15:18	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		09/03/21 04:55	09/10/21 15:18	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		09/03/21 04:55	09/10/21 15:18	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/03/21 04:55	09/10/21 15:18	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/03/21 04:55	09/10/21 15:18	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		09/03/21 04:55	09/10/21 15:18	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/03/21 04:55	09/10/21 15:18	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		09/03/21 04:55	09/10/21 15:18	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		09/03/21 04:55	09/10/21 15:18	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.54	ng/L		09/03/21 04:55	09/10/21 15:18	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		09/03/21 04:55	09/10/21 15:18	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		09/03/21 04:55	09/10/21 15:18	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		09/03/21 04:55	09/10/21 15:18	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		09/03/21 04:55	09/10/21 15:18	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		09/03/21 04:55	09/10/21 15:18	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/03/21 04:55	09/10/21 15:18	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		09/03/21 04:55	09/10/21 15:18	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	64		50 - 150	09/03/21 04:55	09/10/21 15:18	1
13C4 PFHpA	63		50 - 150	09/03/21 04:55	09/10/21 15:18	1
13C4 PFOA	85		50 - 150	09/03/21 04:55	09/10/21 15:18	1
13C5 PFNA	69		50 - 150	09/03/21 04:55	09/10/21 15:18	1
13C2 PFDA	82		50 - 150	09/03/21 04:55	09/10/21 15:18	1
13C2 PFUnA	80		50 - 150	09/03/21 04:55	09/10/21 15:18	1
13C2 PFDoA	86		50 - 150	09/03/21 04:55	09/10/21 15:18	1
13C2 PFTeDA	88		50 - 150	09/03/21 04:55	09/10/21 15:18	1
13C3 PFBS	61		50 - 150	09/03/21 04:55	09/10/21 15:18	1
18O2 PFHxS	81		50 - 150	09/03/21 04:55	09/10/21 15:18	1
13C4 PFOS	71		50 - 150	09/03/21 04:55	09/10/21 15:18	1
d3-NMeFOSAA	69		50 - 150	09/03/21 04:55	09/10/21 15:18	1
d5-NEtFOSAA	75		50 - 150	09/03/21 04:55	09/10/21 15:18	1
13C3 HFPO-DA	64		50 - 150	09/03/21 04:55	09/10/21 15:18	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-501**

**Lab Sample ID: 320-78307-21**

**Date Collected: 08/23/21 10:30**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	1.5	J	1.9	0.55	ng/L		09/03/21 04:55	09/10/21 15:27	1
Perfluoroheptanoic acid (PFHpA)	0.65	J	1.9	0.24	ng/L		09/03/21 04:55	09/10/21 15:27	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		09/03/21 04:55	09/10/21 15:27	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		09/03/21 04:55	09/10/21 15:27	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		09/03/21 04:55	09/10/21 15:27	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/03/21 04:55	09/10/21 15:27	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		09/03/21 04:55	09/10/21 15:27	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/03/21 04:55	09/10/21 15:27	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		09/03/21 04:55	09/10/21 15:27	1
Perfluorobutanesulfonic acid (PFBS)	0.42	J	1.9	0.19	ng/L		09/03/21 04:55	09/10/21 15:27	1
Perfluorohexanesulfonic acid (PFHxS)	4.2		1.9	0.54	ng/L		09/03/21 04:55	09/10/21 15:27	1
Perfluorooctanesulfonic acid (PFOS)	16		1.9	0.51	ng/L		09/03/21 04:55	09/10/21 15:27	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		09/03/21 04:55	09/10/21 15:27	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		09/03/21 04:55	09/10/21 15:27	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		09/03/21 04:55	09/10/21 15:27	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		09/03/21 04:55	09/10/21 15:27	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/03/21 04:55	09/10/21 15:27	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		09/03/21 04:55	09/10/21 15:27	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	64		50 - 150	09/03/21 04:55	09/10/21 15:27	1
13C4 PFHpA	61		50 - 150	09/03/21 04:55	09/10/21 15:27	1
13C4 PFOA	83		50 - 150	09/03/21 04:55	09/10/21 15:27	1
13C5 PFNA	63		50 - 150	09/03/21 04:55	09/10/21 15:27	1
13C2 PFDA	79		50 - 150	09/03/21 04:55	09/10/21 15:27	1
13C2 PFUnA	72		50 - 150	09/03/21 04:55	09/10/21 15:27	1
13C2 PFDoA	82		50 - 150	09/03/21 04:55	09/10/21 15:27	1
13C2 PFTeDA	81		50 - 150	09/03/21 04:55	09/10/21 15:27	1
13C3 PFBS	60		50 - 150	09/03/21 04:55	09/10/21 15:27	1
18O2 PFHxS	71		50 - 150	09/03/21 04:55	09/10/21 15:27	1
13C4 PFOS	67		50 - 150	09/03/21 04:55	09/10/21 15:27	1
d3-NMeFOSAA	63		50 - 150	09/03/21 04:55	09/10/21 15:27	1
d5-NEtFOSAA	69		50 - 150	09/03/21 04:55	09/10/21 15:27	1
13C3 HFPO-DA	78		50 - 150	09/03/21 04:55	09/10/21 15:27	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-219**

**Lab Sample ID: 320-78307-22**

**Date Collected: 08/23/21 11:13**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		09/03/21 04:55	09/10/21 15:37	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		09/03/21 04:55	09/10/21 15:37	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		09/03/21 04:55	09/10/21 15:37	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		09/03/21 04:55	09/10/21 15:37	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/03/21 04:55	09/10/21 15:37	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/03/21 04:55	09/10/21 15:37	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		09/03/21 04:55	09/10/21 15:37	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/03/21 04:55	09/10/21 15:37	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		09/03/21 04:55	09/10/21 15:37	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		09/03/21 04:55	09/10/21 15:37	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.54	ng/L		09/03/21 04:55	09/10/21 15:37	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		09/03/21 04:55	09/10/21 15:37	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		09/03/21 04:55	09/10/21 15:37	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		09/03/21 04:55	09/10/21 15:37	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		09/03/21 04:55	09/10/21 15:37	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		09/03/21 04:55	09/10/21 15:37	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/03/21 04:55	09/10/21 15:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		09/03/21 04:55	09/10/21 15:37	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	66		50 - 150	09/03/21 04:55	09/10/21 15:37	1
13C4 PFHpA	56		50 - 150	09/03/21 04:55	09/10/21 15:37	1
13C4 PFOA	84		50 - 150	09/03/21 04:55	09/10/21 15:37	1
13C5 PFNA	62		50 - 150	09/03/21 04:55	09/10/21 15:37	1
13C2 PFDA	79		50 - 150	09/03/21 04:55	09/10/21 15:37	1
13C2 PFUnA	74		50 - 150	09/03/21 04:55	09/10/21 15:37	1
13C2 PFDoA	79		50 - 150	09/03/21 04:55	09/10/21 15:37	1
13C2 PFTeDA	74		50 - 150	09/03/21 04:55	09/10/21 15:37	1
13C3 PFBS	59		50 - 150	09/03/21 04:55	09/10/21 15:37	1
18O2 PFHxS	76		50 - 150	09/03/21 04:55	09/10/21 15:37	1
13C4 PFOS	66		50 - 150	09/03/21 04:55	09/10/21 15:37	1
d3-NMeFOSAA	62		50 - 150	09/03/21 04:55	09/10/21 15:37	1
d5-NEtFOSAA	68		50 - 150	09/03/21 04:55	09/10/21 15:37	1
13C3 HFPO-DA	61		50 - 150	09/03/21 04:55	09/10/21 15:37	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-401**

**Lab Sample ID: 320-78307-23**

**Date Collected: 08/23/21 10:40**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>1.5</b>	<b>J</b>	1.9	0.56	ng/L		09/03/21 04:55	09/10/21 15:46	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		09/03/21 04:55	09/10/21 15:46	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		09/03/21 04:55	09/10/21 15:46	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		09/03/21 04:55	09/10/21 15:46	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		09/03/21 04:55	09/10/21 15:46	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		09/03/21 04:55	09/10/21 15:46	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		09/03/21 04:55	09/10/21 15:46	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/03/21 04:55	09/10/21 15:46	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		09/03/21 04:55	09/10/21 15:46	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		09/03/21 04:55	09/10/21 15:46	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>3.1</b>		1.9	0.55	ng/L		09/03/21 04:55	09/10/21 15:46	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>22</b>		1.9	0.52	ng/L		09/03/21 04:55	09/10/21 15:46	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		09/03/21 04:55	09/10/21 15:46	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		09/03/21 04:55	09/10/21 15:46	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		09/03/21 04:55	09/10/21 15:46	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		09/03/21 04:55	09/10/21 15:46	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		09/03/21 04:55	09/10/21 15:46	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		09/03/21 04:55	09/10/21 15:46	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	71		50 - 150	09/03/21 04:55	09/10/21 15:46	1
13C4 PFHpA	67		50 - 150	09/03/21 04:55	09/10/21 15:46	1
13C4 PFOA	91		50 - 150	09/03/21 04:55	09/10/21 15:46	1
13C5 PFNA	72		50 - 150	09/03/21 04:55	09/10/21 15:46	1
13C2 PFDA	88		50 - 150	09/03/21 04:55	09/10/21 15:46	1
13C2 PFUnA	75		50 - 150	09/03/21 04:55	09/10/21 15:46	1
13C2 PFDoA	80		50 - 150	09/03/21 04:55	09/10/21 15:46	1
13C2 PFTeDA	85		50 - 150	09/03/21 04:55	09/10/21 15:46	1
13C3 PFBS	64		50 - 150	09/03/21 04:55	09/10/21 15:46	1
18O2 PFHxS	85		50 - 150	09/03/21 04:55	09/10/21 15:46	1
13C4 PFOS	70		50 - 150	09/03/21 04:55	09/10/21 15:46	1
d3-NMeFOSAA	68		50 - 150	09/03/21 04:55	09/10/21 15:46	1
d5-NEtFOSAA	73		50 - 150	09/03/21 04:55	09/10/21 15:46	1
13C3 HFPO-DA	79		50 - 150	09/03/21 04:55	09/10/21 15:46	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-203**

**Lab Sample ID: 320-78307-24**

**Date Collected: 08/26/21 13:43**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		09/03/21 04:55	09/10/21 15:56	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		09/03/21 04:55	09/10/21 15:56	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		09/03/21 04:55	09/10/21 15:56	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		09/03/21 04:55	09/10/21 15:56	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/03/21 04:55	09/10/21 15:56	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/03/21 04:55	09/10/21 15:56	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		09/03/21 04:55	09/10/21 15:56	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/03/21 04:55	09/10/21 15:56	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		09/03/21 04:55	09/10/21 15:56	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		09/03/21 04:55	09/10/21 15:56	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.80</b>	<b>J</b>	1.9	0.54	ng/L		09/03/21 04:55	09/10/21 15:56	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		09/03/21 04:55	09/10/21 15:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		09/03/21 04:55	09/10/21 15:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		09/03/21 04:55	09/10/21 15:56	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		09/03/21 04:55	09/10/21 15:56	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		09/03/21 04:55	09/10/21 15:56	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/03/21 04:55	09/10/21 15:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		09/03/21 04:55	09/10/21 15:56	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	70		50 - 150	09/03/21 04:55	09/10/21 15:56	1
13C4 PFHpA	66		50 - 150	09/03/21 04:55	09/10/21 15:56	1
13C4 PFOA	86		50 - 150	09/03/21 04:55	09/10/21 15:56	1
13C5 PFNA	68		50 - 150	09/03/21 04:55	09/10/21 15:56	1
13C2 PFDA	85		50 - 150	09/03/21 04:55	09/10/21 15:56	1
13C2 PFUnA	78		50 - 150	09/03/21 04:55	09/10/21 15:56	1
13C2 PFDoA	81		50 - 150	09/03/21 04:55	09/10/21 15:56	1
13C2 PFTeDA	79		50 - 150	09/03/21 04:55	09/10/21 15:56	1
13C3 PFBS	69		50 - 150	09/03/21 04:55	09/10/21 15:56	1
18O2 PFHxS	84		50 - 150	09/03/21 04:55	09/10/21 15:56	1
13C4 PFOS	72		50 - 150	09/03/21 04:55	09/10/21 15:56	1
d3-NMeFOSAA	64		50 - 150	09/03/21 04:55	09/10/21 15:56	1
d5-NEtFOSAA	70		50 - 150	09/03/21 04:55	09/10/21 15:56	1
13C3 HFPO-DA	70		50 - 150	09/03/21 04:55	09/10/21 15:56	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-012**

**Lab Sample ID: 320-78307-25**

**Date Collected: 08/26/21 14:19**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		09/03/21 04:55	09/10/21 16:05	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		09/03/21 04:55	09/10/21 16:05	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		09/03/21 04:55	09/10/21 16:05	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		09/03/21 04:55	09/10/21 16:05	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/03/21 04:55	09/10/21 16:05	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/03/21 04:55	09/10/21 16:05	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		09/03/21 04:55	09/10/21 16:05	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/03/21 04:55	09/10/21 16:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		09/03/21 04:55	09/10/21 16:05	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		09/03/21 04:55	09/10/21 16:05	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>2.3</b>		1.9	0.54	ng/L		09/03/21 04:55	09/10/21 16:05	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>4.3</b>		1.9	0.51	ng/L		09/03/21 04:55	09/10/21 16:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		09/03/21 04:55	09/10/21 16:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		09/03/21 04:55	09/10/21 16:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		09/03/21 04:55	09/10/21 16:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		09/03/21 04:55	09/10/21 16:05	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/03/21 04:55	09/10/21 16:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		09/03/21 04:55	09/10/21 16:05	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	67		50 - 150	09/03/21 04:55	09/10/21 16:05	1
13C4 PFHpA	67		50 - 150	09/03/21 04:55	09/10/21 16:05	1
13C4 PFOA	90		50 - 150	09/03/21 04:55	09/10/21 16:05	1
13C5 PFNA	65		50 - 150	09/03/21 04:55	09/10/21 16:05	1
13C2 PFDA	79		50 - 150	09/03/21 04:55	09/10/21 16:05	1
13C2 PFUnA	73		50 - 150	09/03/21 04:55	09/10/21 16:05	1
13C2 PFDoA	81		50 - 150	09/03/21 04:55	09/10/21 16:05	1
13C2 PFTeDA	75		50 - 150	09/03/21 04:55	09/10/21 16:05	1
13C3 PFBS	66		50 - 150	09/03/21 04:55	09/10/21 16:05	1
18O2 PFHxS	77		50 - 150	09/03/21 04:55	09/10/21 16:05	1
13C4 PFOS	70		50 - 150	09/03/21 04:55	09/10/21 16:05	1
d3-NMeFOSAA	66		50 - 150	09/03/21 04:55	09/10/21 16:05	1
d5-NEtFOSAA	68		50 - 150	09/03/21 04:55	09/10/21 16:05	1
13C3 HFPO-DA	72		50 - 150	09/03/21 04:55	09/10/21 16:05	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-061**

**Lab Sample ID: 320-78307-26**

**Date Collected: 08/26/21 14:51**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>0.84</b>	<b>J</b>	1.9	0.56	ng/L		09/03/21 04:55	09/14/21 02:32	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		09/03/21 04:55	09/14/21 02:32	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>1.8</b>	<b>J</b>	1.9	0.81	ng/L		09/03/21 04:55	09/14/21 02:32	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		09/03/21 04:55	09/14/21 02:32	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		09/03/21 04:55	09/14/21 02:32	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		09/03/21 04:55	09/14/21 02:32	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		09/03/21 04:55	09/14/21 02:32	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/03/21 04:55	09/14/21 02:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		09/03/21 04:55	09/14/21 02:32	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.38</b>	<b>J</b>	1.9	0.19	ng/L		09/03/21 04:55	09/14/21 02:32	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.93</b>	<b>J</b>	1.9	0.55	ng/L		09/03/21 04:55	09/14/21 02:32	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		09/03/21 04:55	09/14/21 02:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		09/03/21 04:55	09/14/21 02:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		09/03/21 04:55	09/14/21 02:32	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		09/03/21 04:55	09/14/21 02:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		09/03/21 04:55	09/14/21 02:32	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		09/03/21 04:55	09/14/21 02:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		09/03/21 04:55	09/14/21 02:32	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	78		50 - 150	09/03/21 04:55	09/14/21 02:32	1
13C4 PFHpA	70		50 - 150	09/03/21 04:55	09/14/21 02:32	1
13C4 PFOA	87		50 - 150	09/03/21 04:55	09/14/21 02:32	1
13C5 PFNA	68		50 - 150	09/03/21 04:55	09/14/21 02:32	1
13C2 PFDA	90		50 - 150	09/03/21 04:55	09/14/21 02:32	1
13C2 PFUnA	86		50 - 150	09/03/21 04:55	09/14/21 02:32	1
13C2 PFDoA	89		50 - 150	09/03/21 04:55	09/14/21 02:32	1
13C2 PFTeDA	86		50 - 150	09/03/21 04:55	09/14/21 02:32	1
13C3 PFBS	73		50 - 150	09/03/21 04:55	09/14/21 02:32	1
18O2 PFHxS	79		50 - 150	09/03/21 04:55	09/14/21 02:32	1
13C4 PFOS	75		50 - 150	09/03/21 04:55	09/14/21 02:32	1
d3-NMeFOSAA	79		50 - 150	09/03/21 04:55	09/14/21 02:32	1
d5-NEtFOSAA	83		50 - 150	09/03/21 04:55	09/14/21 02:32	1
13C3 HFPO-DA	83		50 - 150	09/03/21 04:55	09/14/21 02:32	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-230**

**Lab Sample ID: 320-78307-27**

**Date Collected: 08/26/21 15:24**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		09/03/21 04:55	09/10/21 16:24	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		09/03/21 04:55	09/10/21 16:24	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>1.1</b>	<b>J</b>	1.9	0.81	ng/L		09/03/21 04:55	09/10/21 16:24	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		09/03/21 04:55	09/10/21 16:24	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		09/03/21 04:55	09/10/21 16:24	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/03/21 04:55	09/10/21 16:24	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		09/03/21 04:55	09/10/21 16:24	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/03/21 04:55	09/10/21 16:24	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		09/03/21 04:55	09/10/21 16:24	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		09/03/21 04:55	09/10/21 16:24	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>1.8</b>	<b>J</b>	1.9	0.54	ng/L		09/03/21 04:55	09/10/21 16:24	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>2.0</b>		1.9	0.52	ng/L		09/03/21 04:55	09/10/21 16:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		09/03/21 04:55	09/10/21 16:24	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		09/03/21 04:55	09/10/21 16:24	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		09/03/21 04:55	09/10/21 16:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		09/03/21 04:55	09/10/21 16:24	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		09/03/21 04:55	09/10/21 16:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		09/03/21 04:55	09/10/21 16:24	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	71		50 - 150	09/03/21 04:55	09/10/21 16:24	1
13C4 PFHpA	64		50 - 150	09/03/21 04:55	09/10/21 16:24	1
13C4 PFOA	84		50 - 150	09/03/21 04:55	09/10/21 16:24	1
13C5 PFNA	65		50 - 150	09/03/21 04:55	09/10/21 16:24	1
13C2 PFDA	85		50 - 150	09/03/21 04:55	09/10/21 16:24	1
13C2 PFUnA	76		50 - 150	09/03/21 04:55	09/10/21 16:24	1
13C2 PFDoA	81		50 - 150	09/03/21 04:55	09/10/21 16:24	1
13C2 PFTeDA	80		50 - 150	09/03/21 04:55	09/10/21 16:24	1
13C3 PFBS	64		50 - 150	09/03/21 04:55	09/10/21 16:24	1
18O2 PFHxS	78		50 - 150	09/03/21 04:55	09/10/21 16:24	1
13C4 PFOS	69		50 - 150	09/03/21 04:55	09/10/21 16:24	1
d3-NMeFOSAA	66		50 - 150	09/03/21 04:55	09/10/21 16:24	1
d5-NEtFOSAA	70		50 - 150	09/03/21 04:55	09/10/21 16:24	1
13C3 HFPO-DA	72		50 - 150	09/03/21 04:55	09/10/21 16:24	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-112**

**Lab Sample ID: 320-78307-28**

**Date Collected: 08/26/21 14:09**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		09/03/21 04:55	09/10/21 16:33	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		09/03/21 04:55	09/10/21 16:33	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		09/03/21 04:55	09/10/21 16:33	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		09/03/21 04:55	09/10/21 16:33	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/03/21 04:55	09/10/21 16:33	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/03/21 04:55	09/10/21 16:33	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		09/03/21 04:55	09/10/21 16:33	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/03/21 04:55	09/10/21 16:33	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		09/03/21 04:55	09/10/21 16:33	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		09/03/21 04:55	09/10/21 16:33	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>1.9</b>		1.9	0.54	ng/L		09/03/21 04:55	09/10/21 16:33	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>4.2</b>		1.9	0.51	ng/L		09/03/21 04:55	09/10/21 16:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		09/03/21 04:55	09/10/21 16:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		09/03/21 04:55	09/10/21 16:33	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		09/03/21 04:55	09/10/21 16:33	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		09/03/21 04:55	09/10/21 16:33	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/03/21 04:55	09/10/21 16:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		09/03/21 04:55	09/10/21 16:33	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	71		50 - 150	09/03/21 04:55	09/10/21 16:33	1
13C4 PFHpA	72		50 - 150	09/03/21 04:55	09/10/21 16:33	1
13C4 PFOA	83		50 - 150	09/03/21 04:55	09/10/21 16:33	1
13C5 PFNA	67		50 - 150	09/03/21 04:55	09/10/21 16:33	1
13C2 PFDA	78		50 - 150	09/03/21 04:55	09/10/21 16:33	1
13C2 PFUnA	73		50 - 150	09/03/21 04:55	09/10/21 16:33	1
13C2 PFDoA	79		50 - 150	09/03/21 04:55	09/10/21 16:33	1
13C2 PFTeDA	76		50 - 150	09/03/21 04:55	09/10/21 16:33	1
13C3 PFBS	64		50 - 150	09/03/21 04:55	09/10/21 16:33	1
18O2 PFHxS	88		50 - 150	09/03/21 04:55	09/10/21 16:33	1
13C4 PFOS	70		50 - 150	09/03/21 04:55	09/10/21 16:33	1
d3-NMeFOSAA	61		50 - 150	09/03/21 04:55	09/10/21 16:33	1
d5-NEtFOSAA	69		50 - 150	09/03/21 04:55	09/10/21 16:33	1
13C3 HFPO-DA	69		50 - 150	09/03/21 04:55	09/10/21 16:33	1

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

**Matrix: Water**

**Prep Type: Total/NA**

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
320-78307-1	PW-2001	82	85	93	84	86	83	87	81
320-78307-2	PW-419	92	81	95	81	100	89	94	89
320-78307-3	PW-467	73	66	94	73	86	81	87	80
320-78307-4	PW-212	76	71	92	76	89	78	89	83
320-78307-5	NPSWell	80	77	95	78	88	81	83	79
320-78307-6	PW-010	80	77	91	75	87	82	85	87
320-78307-7	PW-221	81	80	96	81	91	88	91	78
320-78307-8	PW-304.1	80	72	97	75	85	85	92	91
320-78307-9	PW-032	77	65	99	74	89	79	94	84
320-78307-10	PW-204.1	77	66	95	72	90	78	87	83
320-78307-11	PW-207	77	68	96	80	86	77	87	87
320-78307-12	PW-205	76	72	93	77	87	79	86	83
320-78307-13	PW-240	79	73	93	75	92	87	94	91
320-78307-14	PW-039	67	65	84	66	79	75	84	83
320-78307-15	PW-438	70	63	89	70	85	81	89	93
320-78307-16	PW-059	73	64	88	67	81	73	82	84
320-78307-17	PW-037	69	68	88	66	84	80	83	79
320-78307-18	PW-211	73	66	86	68	85	76	82	82
320-78307-19	PW-038	72	70	91	72	92	88	90	92
320-78307-20	PW-040	64	63	85	69	82	80	86	88
320-78307-21	PW-501	64	61	83	63	79	72	82	81
320-78307-22	PW-219	66	56	84	62	79	74	79	74
320-78307-23	PW-401	71	67	91	72	88	75	80	85
320-78307-24	PW-203	70	66	86	68	85	78	81	79
320-78307-25	PW-012	67	67	90	65	79	73	81	75
320-78307-26	PW-061	78	70	87	68	90	86	89	86
320-78307-27	PW-230	71	64	84	65	85	76	81	80
320-78307-28	PW-112	71	72	83	67	78	73	79	76
LCS 320-521964/2-A	Lab Control Sample	94	92	97	87	96	92	97	95
LCS 320-522307/2-A	Lab Control Sample	87	85	88	80	88	85	88	77
LCSD 320-521964/3-A	Lab Control Sample Dup	90	92	93	83	94	87	93	91
LCSD 320-522307/3-A	Lab Control Sample Dup	85	81	89	77	82	81	83	77
MB 320-521964/1-A	Method Blank	98	90	99	92	93	92	96	82
MB 320-522307/1-A	Method Blank	85	87	88	78	83	82	82	80

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-78307-1	PW-2001	82	97	74	74	77	82
320-78307-2	PW-419	81	92	88	91	96	95
320-78307-3	PW-467	66	80	69	73	74	75
320-78307-4	PW-212	71	87	76	73	76	69
320-78307-5	NPSWell	72	90	72	70	75	79
320-78307-6	PW-010	68	89	74	73	76	79
320-78307-7	PW-221	74	91	83	74	85	80
320-78307-8	PW-304.1	67	88	76	70	81	77
320-78307-9	PW-032	63	86	77	69	74	78
320-78307-10	PW-204.1	70	84	68	69	71	76
320-78307-11	PW-207	78	92	73	76	80	86
320-78307-12	PW-205	72	91	73	67	73	66

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# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)**

**Matrix: Water**

**Prep Type: Total/NA**

**Percent Isotope Dilution Recovery (Acceptance Limits)**

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-78307-13	PW-240	70	94	82	74	82	77
320-78307-14	PW-039	64	79	70	64	71	72
320-78307-15	PW-438	61	85	74	66	76	67
320-78307-16	PW-059	68	80	68	61	70	74
320-78307-17	PW-037	64	85	76	66	73	76
320-78307-18	PW-211	68	80	74	72	70	75
320-78307-19	PW-038	69	86	79	72	77	70
320-78307-20	PW-040	61	81	71	69	75	64
320-78307-21	PW-501	60	71	67	63	69	78
320-78307-22	PW-219	59	76	66	62	68	61
320-78307-23	PW-401	64	85	70	68	73	79
320-78307-24	PW-203	69	84	72	64	70	70
320-78307-25	PW-012	66	77	70	66	68	72
320-78307-26	PW-061	73	79	75	79	83	83
320-78307-27	PW-230	64	78	69	66	70	72
320-78307-28	PW-112	64	88	70	61	69	69
LCS 320-521964/2-A	Lab Control Sample	95	101	87	88	88	92
LCS 320-522307/2-A	Lab Control Sample	90	99	90	75	83	92
LCSD 320-521964/3-A	Lab Control Sample Dup	91	97	87	82	90	86
LCSD 320-522307/3-A	Lab Control Sample Dup	89	93	79	72	78	75
MB 320-521964/1-A	Method Blank	91	101	85	83	87	100
MB 320-522307/1-A	Method Blank	93	90	83	74	78	91

**Surrogate Legend**

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA



# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-521964/1-A**  
**Matrix: Water**  
**Analysis Batch: 524175**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 521964**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		09/02/21 05:50	09/10/21 17:39	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		09/02/21 05:50	09/10/21 17:39	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		09/02/21 05:50	09/10/21 17:39	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		09/02/21 05:50	09/10/21 17:39	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		09/02/21 05:50	09/10/21 17:39	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		09/02/21 05:50	09/10/21 17:39	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		09/02/21 05:50	09/10/21 17:39	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		09/02/21 05:50	09/10/21 17:39	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		09/02/21 05:50	09/10/21 17:39	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		09/02/21 05:50	09/10/21 17:39	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		09/02/21 05:50	09/10/21 17:39	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		09/02/21 05:50	09/10/21 17:39	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		09/02/21 05:50	09/10/21 17:39	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		09/02/21 05:50	09/10/21 17:39	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		09/02/21 05:50	09/10/21 17:39	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		09/02/21 05:50	09/10/21 17:39	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		09/02/21 05:50	09/10/21 17:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		09/02/21 05:50	09/10/21 17:39	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	98		50 - 150	09/02/21 05:50	09/10/21 17:39	1
13C4 PFHpA	90		50 - 150	09/02/21 05:50	09/10/21 17:39	1
13C4 PFOA	99		50 - 150	09/02/21 05:50	09/10/21 17:39	1
13C5 PFNA	92		50 - 150	09/02/21 05:50	09/10/21 17:39	1
13C2 PFDA	93		50 - 150	09/02/21 05:50	09/10/21 17:39	1
13C2 PFUnA	92		50 - 150	09/02/21 05:50	09/10/21 17:39	1
13C2 PFDoA	96		50 - 150	09/02/21 05:50	09/10/21 17:39	1
13C2 PFTeDA	82		50 - 150	09/02/21 05:50	09/10/21 17:39	1
13C3 PFBS	91		50 - 150	09/02/21 05:50	09/10/21 17:39	1
18O2 PFHxS	101		50 - 150	09/02/21 05:50	09/10/21 17:39	1
13C4 PFOS	85		50 - 150	09/02/21 05:50	09/10/21 17:39	1
d3-NMeFOSAA	83		50 - 150	09/02/21 05:50	09/10/21 17:39	1
d5-NEtFOSAA	87		50 - 150	09/02/21 05:50	09/10/21 17:39	1
13C3 HFPO-DA	100		50 - 150	09/02/21 05:50	09/10/21 17:39	1

**Lab Sample ID: LCS 320-521964/2-A**  
**Matrix: Water**  
**Analysis Batch: 524175**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 521964**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	40.0	33.9		ng/L		85	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	40.7		ng/L		102	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	37.9		ng/L		95	71 - 133
Perfluorononanoic acid (PFNA)	40.0	42.6		ng/L		106	69 - 130

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-521964/2-A**  
**Matrix: Water**  
**Analysis Batch: 524175**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 521964**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	36.2		ng/L		90	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	41.4		ng/L		103	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	38.7		ng/L		97	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	40.5		ng/L		101	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	39.7		ng/L		99	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	34.4		ng/L		97	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.7		ng/L		95	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	39.9		ng/L		108	65 - 140
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	40.0	37.4		ng/L		94	65 - 136
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	40.0	37.1		ng/L		93	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	39.7		ng/L		107	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.8		ng/L		102	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	43.9		ng/L		116	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	39.2		ng/L		104	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	94		50 - 150
13C4 PFHpA	92		50 - 150
13C4 PFOA	97		50 - 150
13C5 PFNA	87		50 - 150
13C2 PFDA	96		50 - 150
13C2 PFUnA	92		50 - 150
13C2 PFDoA	97		50 - 150
13C2 PFTeDA	95		50 - 150
13C3 PFBS	95		50 - 150
18O2 PFHxS	101		50 - 150
13C4 PFOS	87		50 - 150
d3-NMeFOSAA	88		50 - 150
d5-NEtFOSAA	88		50 - 150
13C3 HFPO-DA	92		50 - 150

**Lab Sample ID: LCSD 320-521964/3-A**  
**Matrix: Water**  
**Analysis Batch: 524175**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 521964**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. RPD	
							Limits	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	36.7		ng/L		92	72 - 129	8 30
Perfluoroheptanoic acid (PFHpA)	40.0	38.8		ng/L		97	72 - 130	5 30
Perfluorooctanoic acid (PFOA)	40.0	39.5		ng/L		99	71 - 133	4 30

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-521964/3-A**  
**Matrix: Water**  
**Analysis Batch: 524175**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 521964**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	43.4		ng/L		109	69 - 130	2	30
Perfluorodecanoic acid (PFDA)	40.0	35.0		ng/L		88	71 - 129	3	30
Perfluoroundecanoic acid (PFUnA)	40.0	39.5		ng/L		99	69 - 133	5	30
Perfluorododecanoic acid (PFDoA)	40.0	37.3		ng/L		93	72 - 134	4	30
Perfluorotridecanoic acid (PFTriA)	40.0	41.4		ng/L		104	65 - 144	2	30
Perfluorotetradecanoic acid (PFTeA)	40.0	39.7		ng/L		99	71 - 132	0	30
Perfluorobutanesulfonic acid (PFBS)	35.4	35.8		ng/L		101	72 - 130	4	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.4		ng/L		100	68 - 131	5	30
Perfluorooctanesulfonic acid (PFOS)	37.1	37.6		ng/L		101	65 - 140	6	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.1		ng/L		105	65 - 136	12	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	34.8		ng/L		87	61 - 135	7	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	38.1		ng/L		102	77 - 137	4	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	43.2		ng/L		108	72 - 132	6	30
11-Chloroeicosadecafluoro-3-oxaundecane-1-sulfonic acid	37.7	40.5		ng/L		107	76 - 136	8	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	40.5		ng/L		107	81 - 141	3	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C2 PFHxA	90		50 - 150
13C4 PFHpA	92		50 - 150
13C4 PFOA	93		50 - 150
13C5 PFNA	83		50 - 150
13C2 PFDA	94		50 - 150
13C2 PFUnA	87		50 - 150
13C2 PFDoA	93		50 - 150
13C2 PFTeDA	91		50 - 150
13C3 PFBS	91		50 - 150
18O2 PFHxS	97		50 - 150
13C4 PFOS	87		50 - 150
d3-NMeFOSAA	82		50 - 150
d5-NEtFOSAA	90		50 - 150
13C3 HFPO-DA	86		50 - 150

**Lab Sample ID: MB 320-522307/1-A**  
**Matrix: Water**  
**Analysis Batch: 523924**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 522307**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		09/03/21 04:55	09/10/21 11:23	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		09/03/21 04:55	09/10/21 11:23	1

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# QC Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: MB 320-522307/1-A**  
**Matrix: Water**  
**Analysis Batch: 523924**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 522307**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		09/03/21 04:55	09/10/21 11:23	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		09/03/21 04:55	09/10/21 11:23	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		09/03/21 04:55	09/10/21 11:23	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		09/03/21 04:55	09/10/21 11:23	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		09/03/21 04:55	09/10/21 11:23	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		09/03/21 04:55	09/10/21 11:23	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		09/03/21 04:55	09/10/21 11:23	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		09/03/21 04:55	09/10/21 11:23	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		09/03/21 04:55	09/10/21 11:23	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		09/03/21 04:55	09/10/21 11:23	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		09/03/21 04:55	09/10/21 11:23	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		09/03/21 04:55	09/10/21 11:23	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		09/03/21 04:55	09/10/21 11:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		09/03/21 04:55	09/10/21 11:23	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		09/03/21 04:55	09/10/21 11:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		09/03/21 04:55	09/10/21 11:23	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	85		50 - 150	09/03/21 04:55	09/10/21 11:23	1
13C4 PFHpA	87		50 - 150	09/03/21 04:55	09/10/21 11:23	1
13C4 PFOA	88		50 - 150	09/03/21 04:55	09/10/21 11:23	1
13C5 PFNA	78		50 - 150	09/03/21 04:55	09/10/21 11:23	1
13C2 PFDA	83		50 - 150	09/03/21 04:55	09/10/21 11:23	1
13C2 PFUnA	82		50 - 150	09/03/21 04:55	09/10/21 11:23	1
13C2 PFDoA	82		50 - 150	09/03/21 04:55	09/10/21 11:23	1
13C2 PFTeDA	80		50 - 150	09/03/21 04:55	09/10/21 11:23	1
13C3 PFBS	93		50 - 150	09/03/21 04:55	09/10/21 11:23	1
18O2 PFHxS	90		50 - 150	09/03/21 04:55	09/10/21 11:23	1
13C4 PFOS	83		50 - 150	09/03/21 04:55	09/10/21 11:23	1
d3-NMeFOSAA	74		50 - 150	09/03/21 04:55	09/10/21 11:23	1
d5-NEtFOSAA	78		50 - 150	09/03/21 04:55	09/10/21 11:23	1
13C3 HFPO-DA	91		50 - 150	09/03/21 04:55	09/10/21 11:23	1

**Lab Sample ID: LCS 320-522307/2-A**  
**Matrix: Water**  
**Analysis Batch: 523924**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 522307**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	40.0	39.8		ng/L		99	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	43.8		ng/L		109	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	42.1		ng/L		105	71 - 133
Perfluorononanoic acid (PFNA)	40.0	46.6		ng/L		116	69 - 130
Perfluorodecanoic acid (PFDA)	40.0	39.4		ng/L		98	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	41.3		ng/L		103	69 - 133

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-522307/2-A**  
**Matrix: Water**  
**Analysis Batch: 523924**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 522307**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorododecanoic acid (PFDoA)	40.0	41.1		ng/L		103	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	42.8		ng/L		107	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	44.2		ng/L		111	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	39.7		ng/L		112	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	40.5		ng/L		111	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	41.9		ng/L		113	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	45.4		ng/L		113	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.6		ng/L		99	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	39.6		ng/L		106	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.8		ng/L		104	72 - 132
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	40.9		ng/L		109	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	38.8		ng/L		103	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	87		50 - 150
13C4 PFHpA	85		50 - 150
13C4 PFOA	88		50 - 150
13C5 PFNA	80		50 - 150
13C2 PFDA	88		50 - 150
13C2 PFUnA	85		50 - 150
13C2 PFDoA	88		50 - 150
13C2 PFTeDA	77		50 - 150
13C3 PFBS	90		50 - 150
18O2 PFHxS	99		50 - 150
13C4 PFOS	90		50 - 150
d3-NMeFOSAA	75		50 - 150
d5-NEtFOSAA	83		50 - 150
13C3 HFPO-DA	92		50 - 150

**Lab Sample ID: LCSD 320-522307/3-A**  
**Matrix: Water**  
**Analysis Batch: 523924**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 522307**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	
								RPD	Limit
Perfluorohexanoic acid (PFHxA)	40.0	36.6		ng/L		92	72 - 129	8	30
Perfluoroheptanoic acid (PFHpA)	40.0	43.0		ng/L		107	72 - 130	2	30
Perfluorooctanoic acid (PFOA)	40.0	38.6		ng/L		97	71 - 133	9	30
Perfluorononanoic acid (PFNA)	40.0	46.1		ng/L		115	69 - 130	1	30
Perfluorodecanoic acid (PFDA)	40.0	38.9		ng/L		97	71 - 129	1	30

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-522307/3-A**  
**Matrix: Water**  
**Analysis Batch: 523924**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 522307**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)	40.0	44.3		ng/L		111	69 - 133	7	30
Perfluorododecanoic acid (PFDoA)	40.0	40.0		ng/L		100	72 - 134	3	30
Perfluorotridecanoic acid (PFTriA)	40.0	42.9		ng/L		107	65 - 144	0	30
Perfluorotetradecanoic acid (PFTeA)	40.0	41.4		ng/L		104	71 - 132	7	30
Perfluorobutanesulfonic acid (PFBS)	35.4	38.1		ng/L		108	72 - 130	4	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	37.2		ng/L		102	68 - 131	8	30
Perfluorooctanesulfonic acid (PFOS)	37.1	40.6		ng/L		109	65 - 140	3	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	44.5		ng/L		111	65 - 136	2	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.9		ng/L		102	61 - 135	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	41.9		ng/L		112	77 - 137	6	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	51.4		ng/L		128	72 - 132	21	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	43.8		ng/L		116	76 - 136	7	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	43.5		ng/L		115	81 - 141	11	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	85		50 - 150
13C4 PFHpA	81		50 - 150
13C4 PFOA	89		50 - 150
13C5 PFNA	77		50 - 150
13C2 PFDA	82		50 - 150
13C2 PFUnA	81		50 - 150
13C2 PFDoA	83		50 - 150
13C2 PFTeDA	77		50 - 150
13C3 PFBS	89		50 - 150
18O2 PFHxS	93		50 - 150
13C4 PFOS	79		50 - 150
d3-NMeFOSAA	72		50 - 150
d5-NEtFOSAA	78		50 - 150
13C3 HFPO-DA	75		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
 Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

## LCMS

### Prep Batch: 521964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78307-1	PW-2001	Total/NA	Water	3535	
320-78307-2	PW-419	Total/NA	Water	3535	
320-78307-3	PW-467	Total/NA	Water	3535	
320-78307-4	PW-212	Total/NA	Water	3535	
320-78307-5	NPSWell	Total/NA	Water	3535	
320-78307-6	PW-010	Total/NA	Water	3535	
320-78307-7	PW-221	Total/NA	Water	3535	
320-78307-8	PW-304.1	Total/NA	Water	3535	
320-78307-9	PW-032	Total/NA	Water	3535	
320-78307-10	PW-204.1	Total/NA	Water	3535	
320-78307-11	PW-207	Total/NA	Water	3535	
320-78307-12	PW-205	Total/NA	Water	3535	
MB 320-521964/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-521964/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-521964/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Prep Batch: 522307

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78307-13	PW-240	Total/NA	Water	3535	
320-78307-14	PW-039	Total/NA	Water	3535	
320-78307-15	PW-438	Total/NA	Water	3535	
320-78307-16	PW-059	Total/NA	Water	3535	
320-78307-17	PW-037	Total/NA	Water	3535	
320-78307-18	PW-211	Total/NA	Water	3535	
320-78307-19	PW-038	Total/NA	Water	3535	
320-78307-20	PW-040	Total/NA	Water	3535	
320-78307-21	PW-501	Total/NA	Water	3535	
320-78307-22	PW-219	Total/NA	Water	3535	
320-78307-23	PW-401	Total/NA	Water	3535	
320-78307-24	PW-203	Total/NA	Water	3535	
320-78307-25	PW-012	Total/NA	Water	3535	
320-78307-26	PW-061	Total/NA	Water	3535	
320-78307-27	PW-230	Total/NA	Water	3535	
320-78307-28	PW-112	Total/NA	Water	3535	
MB 320-522307/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-522307/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-522307/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 523924

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78307-13	PW-240	Total/NA	Water	EPA 537(Mod)	522307
320-78307-14	PW-039	Total/NA	Water	EPA 537(Mod)	522307
320-78307-15	PW-438	Total/NA	Water	EPA 537(Mod)	522307
320-78307-16	PW-059	Total/NA	Water	EPA 537(Mod)	522307
320-78307-17	PW-037	Total/NA	Water	EPA 537(Mod)	522307
320-78307-18	PW-211	Total/NA	Water	EPA 537(Mod)	522307
320-78307-19	PW-038	Total/NA	Water	EPA 537(Mod)	522307
MB 320-522307/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	522307
LCS 320-522307/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	522307
LCSD 320-522307/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	522307

Eurofins TestAmerica, Sacramento

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

## LCMS

### Analysis Batch: 523978

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78307-20	PW-040	Total/NA	Water	EPA 537(Mod)	522307
320-78307-21	PW-501	Total/NA	Water	EPA 537(Mod)	522307
320-78307-22	PW-219	Total/NA	Water	EPA 537(Mod)	522307
320-78307-23	PW-401	Total/NA	Water	EPA 537(Mod)	522307
320-78307-24	PW-203	Total/NA	Water	EPA 537(Mod)	522307
320-78307-25	PW-012	Total/NA	Water	EPA 537(Mod)	522307
320-78307-27	PW-230	Total/NA	Water	EPA 537(Mod)	522307
320-78307-28	PW-112	Total/NA	Water	EPA 537(Mod)	522307

### Analysis Batch: 524175

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78307-1	PW-2001	Total/NA	Water	EPA 537(Mod)	521964
320-78307-3	PW-467	Total/NA	Water	EPA 537(Mod)	521964
320-78307-4	PW-212	Total/NA	Water	EPA 537(Mod)	521964
320-78307-5	NPSWell	Total/NA	Water	EPA 537(Mod)	521964
320-78307-6	PW-010	Total/NA	Water	EPA 537(Mod)	521964
320-78307-7	PW-221	Total/NA	Water	EPA 537(Mod)	521964
320-78307-8	PW-304.1	Total/NA	Water	EPA 537(Mod)	521964
320-78307-9	PW-032	Total/NA	Water	EPA 537(Mod)	521964
320-78307-10	PW-204.1	Total/NA	Water	EPA 537(Mod)	521964
320-78307-11	PW-207	Total/NA	Water	EPA 537(Mod)	521964
320-78307-12	PW-205	Total/NA	Water	EPA 537(Mod)	521964
MB 320-521964/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	521964
LCS 320-521964/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	521964
LCSD 320-521964/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	521964

### Analysis Batch: 524311

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78307-2	PW-419	Total/NA	Water	EPA 537(Mod)	521964
320-78307-26	PW-061	Total/NA	Water	EPA 537(Mod)	522307



# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-2001**

**Lab Sample ID: 320-78307-1**

**Date Collected: 08/25/21 09:05**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.6 mL	10.0 mL	521964	09/02/21 05:50	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524175	09/10/21 18:26	K1S	TAL SAC

**Client Sample ID: PW-419**

**Lab Sample ID: 320-78307-2**

**Date Collected: 08/25/21 08:10**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.1 mL	10.0 mL	521964	09/02/21 05:50	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		10			524311	09/14/21 02:23	JY1	TAL SAC

**Client Sample ID: PW-467**

**Lab Sample ID: 320-78307-3**

**Date Collected: 08/25/21 07:48**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265.6 mL	10.0 mL	521964	09/02/21 05:50	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524175	09/10/21 18:45	K1S	TAL SAC

**Client Sample ID: PW-212**

**Lab Sample ID: 320-78307-4**

**Date Collected: 08/25/21 13:32**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			267.6 mL	10.0 mL	521964	09/02/21 05:50	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524175	09/10/21 18:54	K1S	TAL SAC

**Client Sample ID: NPSWell**

**Lab Sample ID: 320-78307-5**

**Date Collected: 08/25/21 09:15**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			256.9 mL	10.0 mL	521964	09/02/21 05:50	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524175	09/10/21 19:04	K1S	TAL SAC

**Client Sample ID: PW-010**

**Lab Sample ID: 320-78307-6**

**Date Collected: 08/24/21 12:16**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			267.4 mL	10.0 mL	521964	09/02/21 05:50	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524175	09/10/21 19:32	K1S	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
 Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-221**

**Lab Sample ID: 320-78307-7**

**Date Collected: 08/24/21 11:48**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			273.3 mL	10.0 mL	521964	09/02/21 05:50	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524175	09/10/21 19:41	K1S	TAL SAC

**Client Sample ID: PW-304.1**

**Lab Sample ID: 320-78307-8**

**Date Collected: 08/24/21 10:26**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			259.4 mL	10.0 mL	521964	09/02/21 05:50	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524175	09/10/21 19:51	K1S	TAL SAC

**Client Sample ID: PW-032**

**Lab Sample ID: 320-78307-9**

**Date Collected: 08/24/21 16:16**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265.5 mL	10.0 mL	521964	09/02/21 05:50	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524175	09/10/21 20:00	K1S	TAL SAC

**Client Sample ID: PW-204.1**

**Lab Sample ID: 320-78307-10**

**Date Collected: 08/24/21 10:36**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			258 mL	10.0 mL	521964	09/02/21 05:50	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524175	09/10/21 20:09	K1S	TAL SAC

**Client Sample ID: PW-207**

**Lab Sample ID: 320-78307-11**

**Date Collected: 08/24/21 09:35**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.8 mL	10.0 mL	521964	09/02/21 05:50	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524175	09/10/21 20:19	K1S	TAL SAC

**Client Sample ID: PW-205**

**Lab Sample ID: 320-78307-12**

**Date Collected: 08/24/21 12:55**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268.8 mL	10.0 mL	521964	09/02/21 05:50	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524175	09/10/21 20:28	K1S	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
 Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-240**

**Lab Sample ID: 320-78307-13**

**Date Collected: 08/24/21 11:13**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			250 mL	10.0 mL	522307	09/03/21 04:55	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523924	09/10/21 11:51	K1S	TAL SAC

**Client Sample ID: PW-039**

**Lab Sample ID: 320-78307-14**

**Date Collected: 08/23/21 14:40**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			267.7 mL	10.0 mL	522307	09/03/21 04:55	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523924	09/10/21 12:01	K1S	TAL SAC

**Client Sample ID: PW-438**

**Lab Sample ID: 320-78307-15**

**Date Collected: 08/23/21 15:39**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			259.6 mL	10.0 mL	522307	09/03/21 04:55	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523924	09/10/21 12:10	K1S	TAL SAC

**Client Sample ID: PW-059**

**Lab Sample ID: 320-78307-16**

**Date Collected: 08/23/21 08:36**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			252 mL	10.0 mL	522307	09/03/21 04:55	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523924	09/10/21 12:19	K1S	TAL SAC

**Client Sample ID: PW-037**

**Lab Sample ID: 320-78307-17**

**Date Collected: 08/23/21 14:04**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			255.7 mL	10.0 mL	522307	09/03/21 04:55	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523924	09/10/21 12:29	K1S	TAL SAC

**Client Sample ID: PW-211**

**Lab Sample ID: 320-78307-18**

**Date Collected: 08/23/21 09:37**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			261.4 mL	10.0 mL	522307	09/03/21 04:55	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523924	09/10/21 12:38	K1S	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

**Client Sample ID: PW-038**

**Date Collected: 08/23/21 13:18**

**Date Received: 08/31/21 15:39**

**Lab Sample ID: 320-78307-19**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			258.5 mL	10.0 mL	522307	09/03/21 04:55	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523924	09/10/21 12:48	K1S	TAL SAC

**Client Sample ID: PW-040**

**Date Collected: 08/23/21 12:30**

**Date Received: 08/31/21 15:39**

**Lab Sample ID: 320-78307-20**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			263.3 mL	10.0 mL	522307	09/03/21 04:55	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523978	09/10/21 15:18	K1S	TAL SAC

**Client Sample ID: PW-501**

**Date Collected: 08/23/21 10:30**

**Date Received: 08/31/21 15:39**

**Lab Sample ID: 320-78307-21**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.3 mL	10.0 mL	522307	09/03/21 04:55	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523978	09/10/21 15:27	K1S	TAL SAC

**Client Sample ID: PW-219**

**Date Collected: 08/23/21 11:13**

**Date Received: 08/31/21 15:39**

**Lab Sample ID: 320-78307-22**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264.9 mL	10.0 mL	522307	09/03/21 04:55	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523978	09/10/21 15:37	K1S	TAL SAC

**Client Sample ID: PW-401**

**Date Collected: 08/23/21 10:40**

**Date Received: 08/31/21 15:39**

**Lab Sample ID: 320-78307-23**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			261 mL	10.0 mL	522307	09/03/21 04:55	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523978	09/10/21 15:46	K1S	TAL SAC

**Client Sample ID: PW-203**

**Date Collected: 08/26/21 13:43**

**Date Received: 08/31/21 15:39**

**Lab Sample ID: 320-78307-24**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264.1 mL	10.0 mL	522307	09/03/21 04:55	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523978	09/10/21 15:56	K1S	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
 Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

## Client Sample ID: PW-012

Lab Sample ID: 320-78307-25

Date Collected: 08/26/21 14:19

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			263.7 mL	10.0 mL	522307	09/03/21 04:55	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523978	09/10/21 16:05	K1S	TAL SAC

## Client Sample ID: PW-061

Lab Sample ID: 320-78307-26

Date Collected: 08/26/21 14:51

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			260.8 mL	10.0 mL	522307	09/03/21 04:55	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524311	09/14/21 02:32	JY1	TAL SAC

## Client Sample ID: PW-230

Lab Sample ID: 320-78307-27

Date Collected: 08/26/21 15:24

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262 mL	10.0 mL	522307	09/03/21 04:55	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523978	09/10/21 16:24	K1S	TAL SAC

## Client Sample ID: PW-112

Lab Sample ID: 320-78307-28

Date Collected: 08/26/21 14:09

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265.2 mL	10.0 mL	522307	09/03/21 04:55	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523978	09/10/21 16:33	K1S	TAL SAC

### Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

## Laboratory: Eurofins TestAmerica, Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

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# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	TAL SAC TAL SAC

#### Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: DOT+PF Gust. PFAS

Job ID: 320-78307-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-78307-1	PW-2001	Water	08/25/21 09:05	08/31/21 15:39
320-78307-2	PW-419	Water	08/25/21 08:10	08/31/21 15:39
320-78307-3	PW-467	Water	08/25/21 07:48	08/31/21 15:39
320-78307-4	PW-212	Water	08/25/21 13:32	08/31/21 15:39
320-78307-5	NPSWell	Water	08/25/21 09:15	08/31/21 15:39
320-78307-6	PW-010	Water	08/24/21 12:16	08/31/21 15:39
320-78307-7	PW-221	Water	08/24/21 11:48	08/31/21 15:39
320-78307-8	PW-304.1	Water	08/24/21 10:26	08/31/21 15:39
320-78307-9	PW-032	Water	08/24/21 16:16	08/31/21 15:39
320-78307-10	PW-204.1	Water	08/24/21 10:36	08/31/21 15:39
320-78307-11	PW-207	Water	08/24/21 09:35	08/31/21 15:39
320-78307-12	PW-205	Water	08/24/21 12:55	08/31/21 15:39
320-78307-13	PW-240	Water	08/24/21 11:13	08/31/21 15:39
320-78307-14	PW-039	Water	08/23/21 14:40	08/31/21 15:39
320-78307-15	PW-438	Water	08/23/21 15:39	08/31/21 15:39
320-78307-16	PW-059	Water	08/23/21 08:36	08/31/21 15:39
320-78307-17	PW-037	Water	08/23/21 14:04	08/31/21 15:39
320-78307-18	PW-211	Water	08/23/21 09:37	08/31/21 15:39
320-78307-19	PW-038	Water	08/23/21 13:18	08/31/21 15:39
320-78307-20	PW-040	Water	08/23/21 12:30	08/31/21 15:39
320-78307-21	PW-501	Water	08/23/21 10:30	08/31/21 15:39
320-78307-22	PW-219	Water	08/23/21 11:13	08/31/21 15:39
320-78307-23	PW-401	Water	08/23/21 10:40	08/31/21 15:39
320-78307-24	PW-203	Water	08/26/21 13:43	08/31/21 15:39
320-78307-25	PW-012	Water	08/26/21 14:19	08/31/21 15:39
320-78307-26	PW-061	Water	08/26/21 14:51	08/31/21 15:39
320-78307-27	PW-230	Water	08/26/21 15:24	08/31/21 15:39
320-78307-28	PW-112	Water	08/26/21 14:09	08/31/21 15:39





# CHAIN-OF-CUSTODY RECORD

Laboratory Test America  
 Attn: D. Altucher

Analytical Methods (include preservative if used)

Turn Around Time:  
 Normal  Rush  
 Please Specify

Quote No: \_\_\_\_\_

J-Flags:  Yes  No

Total Number of Containers	81 X 60 X 18
	2 grandwater

Remarks/Matrix Composition/Grab? Sample Containers

Sample Identity	Lab No.	Time	Date Sampled
PW-2001		0905	8/25/21
PW-419		0810	8/25/21
PW-467		0748	8/25/21
PW-212		1332	8/25/21
NPSHwell		0915	8/25/21
PW-010		1216	8/24/21
PW-221		1148	8/24/21
PW-304.1		1026	8/24/21
PW-03a		1616	8/24/21
PW-204.1		1036	8/24/21



Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Number: <u>10259-020</u>	Total No. of Containers:	Signature: _____	Signature: _____	Signature: _____
Name: <u>Dot + PP Cust. PA</u>	COC Seals/Intact? Y/N/NA	Printed Name: _____	Printed Name: _____	Printed Name: _____
Contact: <u>KRF</u>	Received Good Cond./Cold Temp:	Date: <u>8/27/21</u>	Date: _____	Date: _____
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Delivery Method:	Company: <u>A. Masters</u>	Company: _____	Company: _____
Sampler: <u>ARM</u>	Notes:	Company: <u>Shannon Wilson LLC</u>	Company: _____	Company: _____
Received By: 1.		Received By: 2.	Received By: 3.	
Signature: _____		Signature: _____	Signature: _____	Signature: _____
Printed Name: _____		Printed Name: _____	Printed Name: _____	Printed Name: _____
Date: _____		Date: _____	Date: _____	Date: _____
Company: _____		Company: _____	Company: _____	Company: _____

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file



# CHAIN-OF-CUSTODY RECORD

Laboratory Test America Page 2 of 3  
 Attn: D. Allister

Analytical Methods (include preservative if used)

Turn Around Time:  
 Normal  Rush  
 Please Specify

Quote No: \_\_\_\_\_

J-Flags:  Yes  No

Total Number of Containers		Remarks/Matrix Composition/Grab? Sample Containers	2	Groundwater

Sample Identity	Lab No.	Time	Date Sampled	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
PW-207		0935	8/24/21	X		
PW-205		1255	8/24/21	X		
PW-240		1113	8/24/21	X		
PW-039		1440	8/23/21			
PW-438		1539	8/23/21			
PW-059		0836	8/23/21			
PW-037		1404	8/23/21			
PW-211		0937	8/23/21			
PW-036		1318	8/23/21			
PW-040		1230	8/23/21			

Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Number: _____	Total No. of Containers: _____	Signature: _____	Signature: _____	Signature: _____
Name: _____	COC Seals/Intact? Y/N/NA _____	Time: <u>9:00</u>	Time: _____	Time: _____
Contact: _____	Received Good Cond./Cold _____	Date: <u>8/24/21</u>	Date: _____	Date: _____
Ongoing Project? Yes <input type="checkbox"/> No <input type="checkbox"/>	Temp: _____	Printed Name: <u>A. Masters</u>	Printed Name: _____	Printed Name: _____
Samples: <u>2</u>	Delivery Method: _____	Company: <u>Shannon &amp; Wilson Inc</u>	Company: _____	Company: _____
Notes: _____		Received By: 1.	Received By: 2.	Received By: 3.
		Signature: _____	Signature: _____	Signature: _____
		Time: _____	Time: _____	Time: _____
		Date: _____	Date: _____	Date: _____
		Printed Name: _____	Printed Name: _____	Printed Name: _____
		Company: _____	Company: _____	Company: _____

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file

to List PW-205.1 DJ 8/31/21

No. 36448

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2355 Hill Road  
Fairbanks, AK 99709  
(907) 479-0600  
www.shannonwilson.com

# CHAIN-OF-CUSTODY RECORD

Laboratory Test America Page 3 of 3  
Attn: D. Altucker

Analytical Methods (include preservative if used)

Turn Around Time:  
 Normal  Rush  
 Please Specify

Quote No: \_\_\_\_\_

J-Flags:  Yes  No

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PW-501		1030	8/23/21		
PW-219		1113	8/23/21		
PW-401		1040	8/23/21		
PW-203		1343	8/24/21		
PW-012		1419	8/24/21		
PW-061		1451	8/24/21		
PW-230		1524	8/24/21		
PW-112		1409	8/26/21		

*PTAS 119*

*2 Groundwaters*

Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Number: _____ Name: <u>see page 1</u> Contact: _____ Ongoing Project? <input type="checkbox"/> Yes <input type="checkbox"/> No Sampler: _____	Total No. of Containers: _____ COC Seals/Intact? Y/N/NA _____ Received Good Cond./Cold Temp: _____ Delivery Method: _____	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____
Notes: _____		Time: <u>10:30</u> Date: <u>8/23/21</u> Signature: <u>A. Master</u> Printed Name: <u>Shannon &amp; Wilson, Inc</u> Company: _____	Time: _____ Date: _____ Signature: _____ Printed Name: _____ Company: _____	Time: _____ Date: _____ Signature: _____ Printed Name: _____ Company: _____

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file

No. 36447

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# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-78307-1

**Login Number: 78307**

**List Number: 1**

**Creator: Her, David A**

**List Source: Eurofins TestAmerica, Sacramento**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1504526/1504527
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	IDs on containers do not match the COC. Logged in per COC.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Laboratory Data Review Checklist

Completed By:

Dana Fjare

Title:

Environmental Scientist

Date:

September 15, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-78307-1

Laboratory Report Date:

September 15, 2021

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

Laboratory Report Date:

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

The DEC certified TestAmerica of West Sacramento, CA for the analysis of per- and polyfluorinated alkyl substances (PFAS) on February 11, 2021 by LCMSMS compliant with QSM Version 5.3 Table B-15. These reported analytes were included in the DEC's Contaminated Sites Laboratory Approval 17-020.

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

The requested analyses were conducted by TestAmerica of West Sacramento, CA.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

TestAmerica personnel did not sign the CoC upon receipt at the laboratory.

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

Samples were preserved with Trizma.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

Laboratory Report Date:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes  No  N/A  Comments:

The laboratory reported that the container label for one of the samples did not match the CoC record. The container was labeled as *PW-205.1* but the sample was recorded on the CoC as *PW-205*. The sample was logged in according to the CoC. We note that the correct name for this sample should be *PW-205.1* and the sample has been renamed *PW-205.1* in the analytical data tables.

- e. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

#### 4. Case Narrative

- a. Present and understandable?

Yes  No  N/A  Comments:

- b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

The case narrative form notes the following:

The samples were received in good condition, properly preserved, and at a temperature of 5.6° C and 5.8° C.

The laboratory applied an “I” qualifier to the PFOA results of sample *PW-059* to indicate the transition mass ratio was outside of established limits. This applies to analyte PFOA.

The sample *PW-419* was diluted due to matrix interference. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

The following samples were light orange prior to extraction: *PW-2001*, *PW-419*, *PW-467*, *NPSWell*, *PW-010*, *PW-221*, *PW-032*, *PW-207*, and *PW-205*.

The following samples were orange with sediment in the sample bottle prior to extraction: *PW-240*, *PW-039*, *PW-438*, *PW-059*, *PW-037*, *PW-501*, *PW-219*, *PW-401*, *PW-012*, *PW-061*, *PW-230*, and *PW-112*.

There was insufficient sample volume available to perform a matrix spike (MS) and MS duplicate (MSD) in conjunction with preparation batch 320-521964 and 320-522307.

Laboratory Report Date:

c. Were all corrective actions documented?

Yes  No  N/A  Comments:

Analyst judgment was used to positively identify PFOA in sample *PW-059*.

The dilution factor for sample *PW-419* was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Due to the uncertainty associated with *PW-059* "I" flagged analyte (PFOA), the PFOA result is considered an estimate. The laboratory notes there may be a high bias; therefore, the analyte has been flagged 'JH\*' in the analytical table.

## 5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

The reporting limits (RL) are less than the applicable DEC regulatory limit for the project.

e. Data quality or usability affected?

The data quality and/or usability was not affected; see above.



Laboratory Report Date:

6. QC Samples

## a. Method Blank

- i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

- ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

No analytes were detected in method blank samples above the LOQ.

- iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; project analytes were not detected in the method blanks.

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

Qualification of the data was not required. See above.

- v. Data quality or usability affected?

Comments:

Results are not affected. See above.

## b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A  Comments:

- ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

Laboratory Report Date:

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; LCS/LCSD accuracy and precision were within laboratory control limits.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

Qualification of the data was not required; see above.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

- c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

- i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Insufficient sample volume was available to perform a MS/MSD with the associated preparatory batches. However, the laboratory analyzed an LCS and LCSD to assess laboratory accuracy and precision.

- ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

Laboratory Report Date:

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; MS and MSD samples were not analyzed for this work order.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

- d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes  No  N/A  Comments:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A  Comments:

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

There were no IDA recovery failures associated with this work order.

- iv. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

## Laboratory Report Date:

## e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?  
(If not, enter explanation below.)

Yes  No  N/A  Comments:

PFAS are not volatile compounds. A trip blank is not required for the requested analysis.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?  
(If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

- iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; a trip blank is not required for the requested analysis.

- v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

## f. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

- ii. Submitted blind to lab?

Yes  No  N/A  Comments:

Field duplicate pairs *PW-204.1/PW-304.1*, *PW-401/PW-501*, *NPSWell/PW-2001*, and *PW-012/PW-112* were submitted with this work order.

Laboratory Report Date:

- iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration  
 $R_2$  = Field Duplicate Concentration

Yes  No  N/A  Comments:

RPDs were within project specified range, where calculable, for duplicate pairs *NPSWell/PW-2001*, *PW-204.1/PW-304.1* and *PW-012/PW-112*. The RPD exceeded the data quality objective of 30% in duplicate pair *PW-401/PW-501* for the analytes PFHxS and PFOS.

- iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The results for those analytes with RPD failures are considered estimated with no direction of bias and are flagged “J” in the analytical data tables.

- g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

Decontamination or equipment blank were not required for this project. Samples are not collected using reusable equipment.

- i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

Decontamination or equipment blank were not required for this project.

- ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Decontamination or equipment blank were not required for this project.

- iii. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

- a. Defined and appropriate?

Yes  No  N/A  Comments:

No additional data flags are required.

## ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

Laboratory Job ID: 320-81057-1  
Client Project/Site: Q4 GST PW

**For:**

Shannon & Wilson, Inc  
2355 Hill Rd.  
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger



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Authorized for release by:  
11/10/2021 1:41:43 PM

David Alltucker, Project Manager I  
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### LINKS

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*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count



# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

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## Job ID: 320-81057-1

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### Laboratory: Eurofins TestAmerica, Sacramento

#### Narrative

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#### Job Narrative 320-81057-1

#### Receipt

The samples were received on 10/29/2021 3:04 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.2° C.

#### Receipt Exceptions

The container label for the following sample(s) did not match the information listed on the Chain-of-Custody (COC): sample 13. The container labels list the sample time as 16:12 while the COC lists it as 16:15. Logged and labeled according to COC. PW-211 (320-81057-13).

#### LCMS

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-539424.

Method 3535: The following sample contained floating particulates in the sample bottle prior to extraction: PW-205.1 (320-81057-1).

Method 3535: The following samples were yellow prior to extraction: PW-010 (320-81057-3), PW-221 (320-81057-5), PW-401 (320-81057-6), PW-039 (320-81057-7), PW-037 (320-81057-9), PW-012 (320-81057-11), PW-112 (320-81057-12), PW-211 (320-81057-13), PW-059 (320-81057-14) and PW-159 (320-81057-15).

Method 3535: The following samples contained a thin layer of sediment at the bottom of the bottle prior to extraction: PW-010 (320-81057-3), PW-221 (320-81057-5), PW-401 (320-81057-6), PW-037 (320-81057-9), PW-012 (320-81057-11), PW-112 (320-81057-12), PW-059 (320-81057-14) and PW-159 (320-81057-15).

Method 3535: The following samples were preserved with trizma: PW-205.1 (320-81057-1), PW-305.1 (320-81057-2), PW-010 (320-81057-3), PW-414 (320-81057-4), PW-221 (320-81057-5), PW-401 (320-81057-6), PW-039 (320-81057-7), PW-040 (320-81057-8), PW-037 (320-81057-9), PW-038 (320-81057-10), PW-012 (320-81057-11), PW-112 (320-81057-12), PW-211 (320-81057-13), PW-059 (320-81057-14) and PW-159 (320-81057-15). Thus, the MB, LCS and LCSD also contain trizma.

Method 3535: The following sample was light yellow after extraction/final volume: PW-037 (320-81057-9).

Method 3535: Elevated reporting limits are provided for the following samples due to insufficient sample provided for preparation: PW-040 (320-81057-8) and PW-037 (320-81057-9).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

## Client Sample ID: PW-205.1

Lab Sample ID: 320-81057-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.26	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.0		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.6		1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-305.1

Lab Sample ID: 320-81057-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.22	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.9		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.7		1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-010

Lab Sample ID: 320-81057-3

No Detections.

## Client Sample ID: PW-414

Lab Sample ID: 320-81057-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.4	J	2.0	0.56	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.91	J	2.0	0.53	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-221

Lab Sample ID: 320-81057-5

No Detections.

## Client Sample ID: PW-401

Lab Sample ID: 320-81057-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.3		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.2	J	1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.37	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.3		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	17		1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-039

Lab Sample ID: 320-81057-7

No Detections.

## Client Sample ID: PW-040

Lab Sample ID: 320-81057-8

No Detections.

## Client Sample ID: PW-037

Lab Sample ID: 320-81057-9

No Detections.

## Client Sample ID: PW-038

Lab Sample ID: 320-81057-10

No Detections.

## Client Sample ID: PW-012

Lab Sample ID: 320-81057-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	2.2		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.9		1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

## Client Sample ID: PW-112

## Lab Sample ID: 320-81057-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	2.1		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.8		1.9	0.52	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-211

## Lab Sample ID: 320-81057-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.51	J	2.0	0.20	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.74	J	2.0	0.54	ng/L	1		EPA 537(Mod)	Total/NA
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.2	J	5.0	1.2	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-059

## Lab Sample ID: 320-81057-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.3		2.0	0.58	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.5	J	2.0	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	5.3		2.0	0.85	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.6	J	2.0	0.20	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.4	J	2.0	0.57	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.4	J I	2.0	0.54	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-159

## Lab Sample ID: 320-81057-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.5		2.0	0.57	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.7	J	2.0	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	5.3		2.0	0.84	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.7	J	2.0	0.20	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.5	J	2.0	0.56	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.2	J	2.0	0.53	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

**Client Sample ID: PW-205.1**

**Lab Sample ID: 320-81057-1**

**Date Collected: 10/25/21 11:55**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/03/21 03:40	11/05/21 08:28	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/03/21 03:40	11/05/21 08:28	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		11/03/21 03:40	11/05/21 08:28	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/03/21 03:40	11/05/21 08:28	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/03/21 03:40	11/05/21 08:28	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/03/21 03:40	11/05/21 08:28	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/03/21 03:40	11/05/21 08:28	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/03/21 03:40	11/05/21 08:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		11/03/21 03:40	11/05/21 08:28	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.26</b>	<b>J</b>	1.8	0.18	ng/L		11/03/21 03:40	11/05/21 08:28	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>2.0</b>		1.8	0.52	ng/L		11/03/21 03:40	11/05/21 08:28	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>2.6</b>		1.8	0.49	ng/L		11/03/21 03:40	11/05/21 08:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/03/21 03:40	11/05/21 08:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/03/21 03:40	11/05/21 08:28	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/03/21 03:40	11/05/21 08:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/03/21 03:40	11/05/21 08:28	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/03/21 03:40	11/05/21 08:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		11/03/21 03:40	11/05/21 08:28	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	83		50 - 150	11/03/21 03:40	11/05/21 08:28	1
13C4 PFHpA	93		50 - 150	11/03/21 03:40	11/05/21 08:28	1
13C4 PFOA	88		50 - 150	11/03/21 03:40	11/05/21 08:28	1
13C5 PFNA	89		50 - 150	11/03/21 03:40	11/05/21 08:28	1
13C2 PFDA	90		50 - 150	11/03/21 03:40	11/05/21 08:28	1
13C2 PFUnA	84		50 - 150	11/03/21 03:40	11/05/21 08:28	1
13C2 PFDoA	97		50 - 150	11/03/21 03:40	11/05/21 08:28	1
13C2 PFTeDA	95		50 - 150	11/03/21 03:40	11/05/21 08:28	1
13C3 PFBS	93		50 - 150	11/03/21 03:40	11/05/21 08:28	1
18O2 PFHxS	89		50 - 150	11/03/21 03:40	11/05/21 08:28	1
13C4 PFOS	86		50 - 150	11/03/21 03:40	11/05/21 08:28	1
d3-NMeFOSAA	78		50 - 150	11/03/21 03:40	11/05/21 08:28	1
d5-NEtFOSAA	81		50 - 150	11/03/21 03:40	11/05/21 08:28	1
13C3 HFPO-DA	81		50 - 150	11/03/21 03:40	11/05/21 08:28	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

**Client Sample ID: PW-305.1**

**Lab Sample ID: 320-81057-2**

**Date Collected: 10/25/21 11:45**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		11/03/21 03:40	11/05/21 08:38	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		11/03/21 03:40	11/05/21 08:38	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		11/03/21 03:40	11/05/21 08:38	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/03/21 03:40	11/05/21 08:38	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/03/21 03:40	11/05/21 08:38	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/03/21 03:40	11/05/21 08:38	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		11/03/21 03:40	11/05/21 08:38	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/03/21 03:40	11/05/21 08:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		11/03/21 03:40	11/05/21 08:38	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.22</b>	<b>J</b>	1.9	0.19	ng/L		11/03/21 03:40	11/05/21 08:38	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>1.9</b>		1.9	0.54	ng/L		11/03/21 03:40	11/05/21 08:38	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>2.7</b>		1.9	0.51	ng/L		11/03/21 03:40	11/05/21 08:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		11/03/21 03:40	11/05/21 08:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		11/03/21 03:40	11/05/21 08:38	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		11/03/21 03:40	11/05/21 08:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		11/03/21 03:40	11/05/21 08:38	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/03/21 03:40	11/05/21 08:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		11/03/21 03:40	11/05/21 08:38	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFHxA	82		50 - 150				11/03/21 03:40	11/05/21 08:38	1
13C4 PFHpA	88		50 - 150				11/03/21 03:40	11/05/21 08:38	1
13C4 PFOA	93		50 - 150				11/03/21 03:40	11/05/21 08:38	1
13C5 PFNA	89		50 - 150				11/03/21 03:40	11/05/21 08:38	1
13C2 PFDA	88		50 - 150				11/03/21 03:40	11/05/21 08:38	1
13C2 PFUnA	86		50 - 150				11/03/21 03:40	11/05/21 08:38	1
13C2 PFDoA	98		50 - 150				11/03/21 03:40	11/05/21 08:38	1
13C2 PFTeDA	100		50 - 150				11/03/21 03:40	11/05/21 08:38	1
13C3 PFBS	85		50 - 150				11/03/21 03:40	11/05/21 08:38	1
18O2 PFHxS	82		50 - 150				11/03/21 03:40	11/05/21 08:38	1
13C4 PFOS	92		50 - 150				11/03/21 03:40	11/05/21 08:38	1
d3-NMeFOSAA	85		50 - 150				11/03/21 03:40	11/05/21 08:38	1
d5-NEtFOSAA	85		50 - 150				11/03/21 03:40	11/05/21 08:38	1
13C3 HFPO-DA	72		50 - 150				11/03/21 03:40	11/05/21 08:38	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

**Client Sample ID: PW-010**

**Lab Sample ID: 320-81057-3**

**Date Collected: 10/25/21 16:55**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.56	ng/L		11/03/21 03:40	11/05/21 08:48	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		11/03/21 03:40	11/05/21 08:48	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		11/03/21 03:40	11/05/21 08:48	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		11/03/21 03:40	11/05/21 08:48	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		11/03/21 03:40	11/05/21 08:48	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		11/03/21 03:40	11/05/21 08:48	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		11/03/21 03:40	11/05/21 08:48	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		11/03/21 03:40	11/05/21 08:48	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		11/03/21 03:40	11/05/21 08:48	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/03/21 03:40	11/05/21 08:48	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.55	ng/L		11/03/21 03:40	11/05/21 08:48	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		11/03/21 03:40	11/05/21 08:48	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		11/03/21 03:40	11/05/21 08:48	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		11/03/21 03:40	11/05/21 08:48	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		11/03/21 03:40	11/05/21 08:48	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		11/03/21 03:40	11/05/21 08:48	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		11/03/21 03:40	11/05/21 08:48	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		11/03/21 03:40	11/05/21 08:48	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	78		50 - 150	11/03/21 03:40	11/05/21 08:48	1
13C4 PFHpA	90		50 - 150	11/03/21 03:40	11/05/21 08:48	1
13C4 PFOA	92		50 - 150	11/03/21 03:40	11/05/21 08:48	1
13C5 PFNA	89		50 - 150	11/03/21 03:40	11/05/21 08:48	1
13C2 PFDA	88		50 - 150	11/03/21 03:40	11/05/21 08:48	1
13C2 PFUnA	91		50 - 150	11/03/21 03:40	11/05/21 08:48	1
13C2 PFDoA	96		50 - 150	11/03/21 03:40	11/05/21 08:48	1
13C2 PFTeDA	88		50 - 150	11/03/21 03:40	11/05/21 08:48	1
13C3 PFBS	86		50 - 150	11/03/21 03:40	11/05/21 08:48	1
18O2 PFHxS	84		50 - 150	11/03/21 03:40	11/05/21 08:48	1
13C4 PFOS	84		50 - 150	11/03/21 03:40	11/05/21 08:48	1
d3-NMeFOSAA	83		50 - 150	11/03/21 03:40	11/05/21 08:48	1
d5-NEtFOSAA	79		50 - 150	11/03/21 03:40	11/05/21 08:48	1
13C3 HFPO-DA	79		50 - 150	11/03/21 03:40	11/05/21 08:48	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

**Client Sample ID: PW-414**

**Lab Sample ID: 320-81057-4**

**Date Collected: 10/25/21 17:42**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.57	ng/L		11/03/21 03:40	11/05/21 08:58	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.24	ng/L		11/03/21 03:40	11/05/21 08:58	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.83	ng/L		11/03/21 03:40	11/05/21 08:58	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.26	ng/L		11/03/21 03:40	11/05/21 08:58	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.30	ng/L		11/03/21 03:40	11/05/21 08:58	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/03/21 03:40	11/05/21 08:58	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		11/03/21 03:40	11/05/21 08:58	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/03/21 03:40	11/05/21 08:58	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.71	ng/L		11/03/21 03:40	11/05/21 08:58	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/03/21 03:40	11/05/21 08:58	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>1.4</b>	<b>J</b>	2.0	0.56	ng/L		11/03/21 03:40	11/05/21 08:58	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.91</b>	<b>J</b>	2.0	0.53	ng/L		11/03/21 03:40	11/05/21 08:58	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		11/03/21 03:40	11/05/21 08:58	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		11/03/21 03:40	11/05/21 08:58	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.23	ng/L		11/03/21 03:40	11/05/21 08:58	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		11/03/21 03:40	11/05/21 08:58	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.31	ng/L		11/03/21 03:40	11/05/21 08:58	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		11/03/21 03:40	11/05/21 08:58	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		50 - 150	11/03/21 03:40	11/05/21 08:58	1
13C4 PFHpA	89		50 - 150	11/03/21 03:40	11/05/21 08:58	1
13C4 PFOA	93		50 - 150	11/03/21 03:40	11/05/21 08:58	1
13C5 PFNA	94		50 - 150	11/03/21 03:40	11/05/21 08:58	1
13C2 PFDA	92		50 - 150	11/03/21 03:40	11/05/21 08:58	1
13C2 PFUnA	88		50 - 150	11/03/21 03:40	11/05/21 08:58	1
13C2 PFDoA	98		50 - 150	11/03/21 03:40	11/05/21 08:58	1
13C2 PFTeDA	92		50 - 150	11/03/21 03:40	11/05/21 08:58	1
13C3 PFBS	98		50 - 150	11/03/21 03:40	11/05/21 08:58	1
18O2 PFHxS	90		50 - 150	11/03/21 03:40	11/05/21 08:58	1
13C4 PFOS	94		50 - 150	11/03/21 03:40	11/05/21 08:58	1
d3-NMeFOSAA	79		50 - 150	11/03/21 03:40	11/05/21 08:58	1
d5-NEtFOSAA	82		50 - 150	11/03/21 03:40	11/05/21 08:58	1
13C3 HFPO-DA	81		50 - 150	11/03/21 03:40	11/05/21 08:58	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

**Client Sample ID: PW-221**

**Lab Sample ID: 320-81057-5**

**Date Collected: 10/26/21 10:32**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.56	ng/L		11/03/21 03:40	11/05/21 09:09	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		11/03/21 03:40	11/05/21 09:09	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.83	ng/L		11/03/21 03:40	11/05/21 09:09	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		11/03/21 03:40	11/05/21 09:09	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		11/03/21 03:40	11/05/21 09:09	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		11/03/21 03:40	11/05/21 09:09	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		11/03/21 03:40	11/05/21 09:09	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		11/03/21 03:40	11/05/21 09:09	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		11/03/21 03:40	11/05/21 09:09	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/03/21 03:40	11/05/21 09:09	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.55	ng/L		11/03/21 03:40	11/05/21 09:09	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		11/03/21 03:40	11/05/21 09:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		11/03/21 03:40	11/05/21 09:09	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		11/03/21 03:40	11/05/21 09:09	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		11/03/21 03:40	11/05/21 09:09	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		11/03/21 03:40	11/05/21 09:09	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		11/03/21 03:40	11/05/21 09:09	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		11/03/21 03:40	11/05/21 09:09	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		50 - 150	11/03/21 03:40	11/05/21 09:09	1
13C4 PFHpA	97		50 - 150	11/03/21 03:40	11/05/21 09:09	1
13C4 PFOA	100		50 - 150	11/03/21 03:40	11/05/21 09:09	1
13C5 PFNA	101		50 - 150	11/03/21 03:40	11/05/21 09:09	1
13C2 PFDA	99		50 - 150	11/03/21 03:40	11/05/21 09:09	1
13C2 PFUnA	95		50 - 150	11/03/21 03:40	11/05/21 09:09	1
13C2 PFDoA	108		50 - 150	11/03/21 03:40	11/05/21 09:09	1
13C2 PFTeDA	100		50 - 150	11/03/21 03:40	11/05/21 09:09	1
13C3 PFBS	101		50 - 150	11/03/21 03:40	11/05/21 09:09	1
18O2 PFHxS	97		50 - 150	11/03/21 03:40	11/05/21 09:09	1
13C4 PFOS	100		50 - 150	11/03/21 03:40	11/05/21 09:09	1
d3-NMeFOSAA	87		50 - 150	11/03/21 03:40	11/05/21 09:09	1
d5-NEtFOSAA	84		50 - 150	11/03/21 03:40	11/05/21 09:09	1
13C3 HFPO-DA	91		50 - 150	11/03/21 03:40	11/05/21 09:09	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

**Client Sample ID: PW-401**

**Lab Sample ID: 320-81057-6**

**Date Collected: 10/26/21 11:15**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	2.3		1.9	0.55	ng/L		11/03/21 03:40	11/05/21 09:19	1
Perfluoroheptanoic acid (PFHpA)	1.2	J	1.9	0.24	ng/L		11/03/21 03:40	11/05/21 09:19	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		11/03/21 03:40	11/05/21 09:19	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		11/03/21 03:40	11/05/21 09:19	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/03/21 03:40	11/05/21 09:19	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/03/21 03:40	11/05/21 09:19	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		11/03/21 03:40	11/05/21 09:19	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/03/21 03:40	11/05/21 09:19	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		11/03/21 03:40	11/05/21 09:19	1
Perfluorobutanesulfonic acid (PFBS)	0.37	J	1.9	0.19	ng/L		11/03/21 03:40	11/05/21 09:19	1
Perfluorohexanesulfonic acid (PFHxS)	5.3		1.9	0.54	ng/L		11/03/21 03:40	11/05/21 09:19	1
Perfluorooctanesulfonic acid (PFOS)	17		1.9	0.51	ng/L		11/03/21 03:40	11/05/21 09:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		11/03/21 03:40	11/05/21 09:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		11/03/21 03:40	11/05/21 09:19	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		11/03/21 03:40	11/05/21 09:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		11/03/21 03:40	11/05/21 09:19	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/03/21 03:40	11/05/21 09:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		11/03/21 03:40	11/05/21 09:19	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C2 PFHxA	78		50 - 150				11/03/21 03:40	11/05/21 09:19	1
13C4 PFHpA	85		50 - 150				11/03/21 03:40	11/05/21 09:19	1
13C4 PFOA	86		50 - 150				11/03/21 03:40	11/05/21 09:19	1
13C5 PFNA	84		50 - 150				11/03/21 03:40	11/05/21 09:19	1
13C2 PFDA	84		50 - 150				11/03/21 03:40	11/05/21 09:19	1
13C2 PFUnA	82		50 - 150				11/03/21 03:40	11/05/21 09:19	1
13C2 PFDoA	85		50 - 150				11/03/21 03:40	11/05/21 09:19	1
13C2 PFTeDA	74		50 - 150				11/03/21 03:40	11/05/21 09:19	1
13C3 PFBS	86		50 - 150				11/03/21 03:40	11/05/21 09:19	1
18O2 PFHxS	79		50 - 150				11/03/21 03:40	11/05/21 09:19	1
13C4 PFOS	85		50 - 150				11/03/21 03:40	11/05/21 09:19	1
d3-NMeFOSAA	70		50 - 150				11/03/21 03:40	11/05/21 09:19	1
d5-NEtFOSAA	67		50 - 150				11/03/21 03:40	11/05/21 09:19	1
13C3 HFPO-DA	73		50 - 150				11/03/21 03:40	11/05/21 09:19	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

**Client Sample ID: PW-039**

**Lab Sample ID: 320-81057-7**

**Date Collected: 10/26/21 12:51**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.56	ng/L		11/03/21 03:40	11/05/21 09:29	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		11/03/21 03:40	11/05/21 09:29	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.83	ng/L		11/03/21 03:40	11/05/21 09:29	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		11/03/21 03:40	11/05/21 09:29	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		11/03/21 03:40	11/05/21 09:29	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		11/03/21 03:40	11/05/21 09:29	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		11/03/21 03:40	11/05/21 09:29	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		11/03/21 03:40	11/05/21 09:29	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		11/03/21 03:40	11/05/21 09:29	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/03/21 03:40	11/05/21 09:29	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.55	ng/L		11/03/21 03:40	11/05/21 09:29	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		11/03/21 03:40	11/05/21 09:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		11/03/21 03:40	11/05/21 09:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		11/03/21 03:40	11/05/21 09:29	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		11/03/21 03:40	11/05/21 09:29	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		11/03/21 03:40	11/05/21 09:29	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		11/03/21 03:40	11/05/21 09:29	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		11/03/21 03:40	11/05/21 09:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	85		50 - 150	11/03/21 03:40	11/05/21 09:29	1
13C4 PFHpA	84		50 - 150	11/03/21 03:40	11/05/21 09:29	1
13C4 PFOA	87		50 - 150	11/03/21 03:40	11/05/21 09:29	1
13C5 PFNA	85		50 - 150	11/03/21 03:40	11/05/21 09:29	1
13C2 PFDA	87		50 - 150	11/03/21 03:40	11/05/21 09:29	1
13C2 PFUnA	80		50 - 150	11/03/21 03:40	11/05/21 09:29	1
13C2 PFDoA	91		50 - 150	11/03/21 03:40	11/05/21 09:29	1
13C2 PFTeDA	75		50 - 150	11/03/21 03:40	11/05/21 09:29	1
13C3 PFBS	89		50 - 150	11/03/21 03:40	11/05/21 09:29	1
18O2 PFHxS	84		50 - 150	11/03/21 03:40	11/05/21 09:29	1
13C4 PFOS	86		50 - 150	11/03/21 03:40	11/05/21 09:29	1
d3-NMeFOSAA	74		50 - 150	11/03/21 03:40	11/05/21 09:29	1
d5-NEtFOSAA	73		50 - 150	11/03/21 03:40	11/05/21 09:29	1
13C3 HFPO-DA	76		50 - 150	11/03/21 03:40	11/05/21 09:29	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

**Client Sample ID: PW-040**

**Lab Sample ID: 320-81057-8**

**Date Collected: 10/26/21 13:18**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.59	ng/L		11/03/21 03:40	11/05/21 09:59	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/03/21 03:40	11/05/21 09:59	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.87	ng/L		11/03/21 03:40	11/05/21 09:59	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/03/21 03:40	11/05/21 09:59	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.32	ng/L		11/03/21 03:40	11/05/21 09:59	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/03/21 03:40	11/05/21 09:59	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.56	ng/L		11/03/21 03:40	11/05/21 09:59	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/03/21 03:40	11/05/21 09:59	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.74	ng/L		11/03/21 03:40	11/05/21 09:59	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/03/21 03:40	11/05/21 09:59	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.58	ng/L		11/03/21 03:40	11/05/21 09:59	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.55	ng/L		11/03/21 03:40	11/05/21 09:59	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.1	1.2	ng/L		11/03/21 03:40	11/05/21 09:59	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.1	1.3	ng/L		11/03/21 03:40	11/05/21 09:59	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/03/21 03:40	11/05/21 09:59	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.1	1.5	ng/L		11/03/21 03:40	11/05/21 09:59	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.33	ng/L		11/03/21 03:40	11/05/21 09:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.41	ng/L		11/03/21 03:40	11/05/21 09:59	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	76		50 - 150	11/03/21 03:40	11/05/21 09:59	1
13C4 PFHpA	92		50 - 150	11/03/21 03:40	11/05/21 09:59	1
13C4 PFOA	94		50 - 150	11/03/21 03:40	11/05/21 09:59	1
13C5 PFNA	93		50 - 150	11/03/21 03:40	11/05/21 09:59	1
13C2 PFDA	84		50 - 150	11/03/21 03:40	11/05/21 09:59	1
13C2 PFUnA	81		50 - 150	11/03/21 03:40	11/05/21 09:59	1
13C2 PFDoA	94		50 - 150	11/03/21 03:40	11/05/21 09:59	1
13C2 PFTeDA	95		50 - 150	11/03/21 03:40	11/05/21 09:59	1
13C3 PFBS	92		50 - 150	11/03/21 03:40	11/05/21 09:59	1
18O2 PFHxS	87		50 - 150	11/03/21 03:40	11/05/21 09:59	1
13C4 PFOS	93		50 - 150	11/03/21 03:40	11/05/21 09:59	1
d3-NMeFOSAA	77		50 - 150	11/03/21 03:40	11/05/21 09:59	1
d5-NEtFOSAA	83		50 - 150	11/03/21 03:40	11/05/21 09:59	1
13C3 HFPO-DA	77		50 - 150	11/03/21 03:40	11/05/21 09:59	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

**Client Sample ID: PW-037**

**Lab Sample ID: 320-81057-9**

**Date Collected: 10/26/21 12:27**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.1	0.61	ng/L		11/03/21 03:40	11/05/21 10:09	1
Perfluoroheptanoic acid (PFHpA)	ND		2.1	0.26	ng/L		11/03/21 03:40	11/05/21 10:09	1
Perfluorooctanoic acid (PFOA)	ND		2.1	0.89	ng/L		11/03/21 03:40	11/05/21 10:09	1
Perfluorononanoic acid (PFNA)	ND		2.1	0.28	ng/L		11/03/21 03:40	11/05/21 10:09	1
Perfluorodecanoic acid (PFDA)	ND		2.1	0.32	ng/L		11/03/21 03:40	11/05/21 10:09	1
Perfluoroundecanoic acid (PFUnA)	ND		2.1	1.2	ng/L		11/03/21 03:40	11/05/21 10:09	1
Perfluorododecanoic acid (PFDoA)	ND		2.1	0.58	ng/L		11/03/21 03:40	11/05/21 10:09	1
Perfluorotridecanoic acid (PFTriA)	ND		2.1	1.4	ng/L		11/03/21 03:40	11/05/21 10:09	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.1	0.76	ng/L		11/03/21 03:40	11/05/21 10:09	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.1	0.21	ng/L		11/03/21 03:40	11/05/21 10:09	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.1	0.60	ng/L		11/03/21 03:40	11/05/21 10:09	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.1	0.57	ng/L		11/03/21 03:40	11/05/21 10:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.2	1.3	ng/L		11/03/21 03:40	11/05/21 10:09	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.2	1.4	ng/L		11/03/21 03:40	11/05/21 10:09	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.1	0.25	ng/L		11/03/21 03:40	11/05/21 10:09	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.2	1.6	ng/L		11/03/21 03:40	11/05/21 10:09	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.1	0.34	ng/L		11/03/21 03:40	11/05/21 10:09	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.1	0.42	ng/L		11/03/21 03:40	11/05/21 10:09	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		50 - 150	11/03/21 03:40	11/05/21 10:09	1
13C4 PFHpA	92		50 - 150	11/03/21 03:40	11/05/21 10:09	1
13C4 PFOA	96		50 - 150	11/03/21 03:40	11/05/21 10:09	1
13C5 PFNA	95		50 - 150	11/03/21 03:40	11/05/21 10:09	1
13C2 PFDA	88		50 - 150	11/03/21 03:40	11/05/21 10:09	1
13C2 PFUnA	91		50 - 150	11/03/21 03:40	11/05/21 10:09	1
13C2 PFDoA	100		50 - 150	11/03/21 03:40	11/05/21 10:09	1
13C2 PFTeDA	94		50 - 150	11/03/21 03:40	11/05/21 10:09	1
13C3 PFBS	93		50 - 150	11/03/21 03:40	11/05/21 10:09	1
18O2 PFHxS	89		50 - 150	11/03/21 03:40	11/05/21 10:09	1
13C4 PFOS	93		50 - 150	11/03/21 03:40	11/05/21 10:09	1
d3-NMeFOSAA	80		50 - 150	11/03/21 03:40	11/05/21 10:09	1
d5-NEtFOSAA	80		50 - 150	11/03/21 03:40	11/05/21 10:09	1
13C3 HFPO-DA	85		50 - 150	11/03/21 03:40	11/05/21 10:09	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

**Client Sample ID: PW-038**

**Lab Sample ID: 320-81057-10**

**Date Collected: 10/26/21 13:45**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.56	ng/L		11/03/21 03:40	11/05/21 10:19	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		11/03/21 03:40	11/05/21 10:19	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		11/03/21 03:40	11/05/21 10:19	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		11/03/21 03:40	11/05/21 10:19	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		11/03/21 03:40	11/05/21 10:19	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		11/03/21 03:40	11/05/21 10:19	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		11/03/21 03:40	11/05/21 10:19	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		11/03/21 03:40	11/05/21 10:19	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		11/03/21 03:40	11/05/21 10:19	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/03/21 03:40	11/05/21 10:19	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.55	ng/L		11/03/21 03:40	11/05/21 10:19	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		11/03/21 03:40	11/05/21 10:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		11/03/21 03:40	11/05/21 10:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.3	ng/L		11/03/21 03:40	11/05/21 10:19	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		11/03/21 03:40	11/05/21 10:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		11/03/21 03:40	11/05/21 10:19	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		11/03/21 03:40	11/05/21 10:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		11/03/21 03:40	11/05/21 10:19	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	84		50 - 150	11/03/21 03:40	11/05/21 10:19	1
13C4 PFHpA	93		50 - 150	11/03/21 03:40	11/05/21 10:19	1
13C4 PFOA	93		50 - 150	11/03/21 03:40	11/05/21 10:19	1
13C5 PFNA	96		50 - 150	11/03/21 03:40	11/05/21 10:19	1
13C2 PFDA	93		50 - 150	11/03/21 03:40	11/05/21 10:19	1
13C2 PFUnA	88		50 - 150	11/03/21 03:40	11/05/21 10:19	1
13C2 PFDoA	102		50 - 150	11/03/21 03:40	11/05/21 10:19	1
13C2 PFTeDA	102		50 - 150	11/03/21 03:40	11/05/21 10:19	1
13C3 PFBS	94		50 - 150	11/03/21 03:40	11/05/21 10:19	1
18O2 PFHxS	95		50 - 150	11/03/21 03:40	11/05/21 10:19	1
13C4 PFOS	99		50 - 150	11/03/21 03:40	11/05/21 10:19	1
d3-NMeFOSAA	83		50 - 150	11/03/21 03:40	11/05/21 10:19	1
d5-NEtFOSAA	87		50 - 150	11/03/21 03:40	11/05/21 10:19	1
13C3 HFPO-DA	79		50 - 150	11/03/21 03:40	11/05/21 10:19	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

**Client Sample ID: PW-012**

**Lab Sample ID: 320-81057-11**

**Date Collected: 10/26/21 15:24**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		11/03/21 03:40	11/05/21 10:29	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		11/03/21 03:40	11/05/21 10:29	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		11/03/21 03:40	11/05/21 10:29	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		11/03/21 03:40	11/05/21 10:29	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/03/21 03:40	11/05/21 10:29	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/03/21 03:40	11/05/21 10:29	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		11/03/21 03:40	11/05/21 10:29	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/03/21 03:40	11/05/21 10:29	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		11/03/21 03:40	11/05/21 10:29	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/03/21 03:40	11/05/21 10:29	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>2.2</b>		1.9	0.54	ng/L		11/03/21 03:40	11/05/21 10:29	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>4.9</b>		1.9	0.51	ng/L		11/03/21 03:40	11/05/21 10:29	1
N-methylperfluorooctanesulfonamideacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		11/03/21 03:40	11/05/21 10:29	1
N-ethylperfluorooctanesulfonamideacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		11/03/21 03:40	11/05/21 10:29	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		11/03/21 03:40	11/05/21 10:29	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		11/03/21 03:40	11/05/21 10:29	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/03/21 03:40	11/05/21 10:29	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		11/03/21 03:40	11/05/21 10:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	80		50 - 150	1/03/21 03:40	1/05/21 10:29	
13C4 PFHpA	87		50 - 150	1/03/21 03:40	1/05/21 10:29	
13C4 PFOA	90		50 - 150	1/03/21 03:40	1/05/21 10:29	
13C5 PFNA	87		50 - 150	1/03/21 03:40	1/05/21 10:29	
13C2 PFDA	91		50 - 150	1/03/21 03:40	1/05/21 10:29	
13C2 PFUnA	83		50 - 150	1/03/21 03:40	1/05/21 10:29	
13C2 PFDoA	93		50 - 150	1/03/21 03:40	1/05/21 10:29	
13C2 PFTeDA	82		50 - 150	1/03/21 03:40	1/05/21 10:29	
13C3 PFBS	82		50 - 150	1/03/21 03:40	1/05/21 10:29	
18O2 PFHxS	87		50 - 150	1/03/21 03:40	1/05/21 10:29	
13C4 PFOS	88		50 - 150	1/03/21 03:40	1/05/21 10:29	
d3-NMeFOSAA	75		50 - 150	1/03/21 03:40	1/05/21 10:29	
d5-NEtFOSAA	72		50 - 150	1/03/21 03:40	1/05/21 10:29	
13C3 HFPO-DA	76		50 - 150	1/03/21 03:40	1/05/21 10:29	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

**Client Sample ID: PW-112**

**Lab Sample ID: 320-81057-12**

**Date Collected: 10/26/21 15:14**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.56	ng/L		11/03/21 03:40	11/05/21 10:40	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		11/03/21 03:40	11/05/21 10:40	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		11/03/21 03:40	11/05/21 10:40	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		11/03/21 03:40	11/05/21 10:40	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		11/03/21 03:40	11/05/21 10:40	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		11/03/21 03:40	11/05/21 10:40	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		11/03/21 03:40	11/05/21 10:40	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/03/21 03:40	11/05/21 10:40	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		11/03/21 03:40	11/05/21 10:40	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/03/21 03:40	11/05/21 10:40	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>2.1</b>		1.9	0.55	ng/L		11/03/21 03:40	11/05/21 10:40	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>4.8</b>		1.9	0.52	ng/L		11/03/21 03:40	11/05/21 10:40	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		11/03/21 03:40	11/05/21 10:40	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		11/03/21 03:40	11/05/21 10:40	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		11/03/21 03:40	11/05/21 10:40	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		11/03/21 03:40	11/05/21 10:40	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		11/03/21 03:40	11/05/21 10:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		11/03/21 03:40	11/05/21 10:40	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		50 - 150	11/03/21 03:40	11/05/21 10:40	1
13C4 PFHpA	89		50 - 150	11/03/21 03:40	11/05/21 10:40	1
13C4 PFOA	94		50 - 150	11/03/21 03:40	11/05/21 10:40	1
13C5 PFNA	89		50 - 150	11/03/21 03:40	11/05/21 10:40	1
13C2 PFDA	90		50 - 150	11/03/21 03:40	11/05/21 10:40	1
13C2 PFUnA	88		50 - 150	11/03/21 03:40	11/05/21 10:40	1
13C2 PFDoA	94		50 - 150	11/03/21 03:40	11/05/21 10:40	1
13C2 PFTeDA	82		50 - 150	11/03/21 03:40	11/05/21 10:40	1
13C3 PFBS	90		50 - 150	11/03/21 03:40	11/05/21 10:40	1
18O2 PFHxS	82		50 - 150	11/03/21 03:40	11/05/21 10:40	1
13C4 PFOS	83		50 - 150	11/03/21 03:40	11/05/21 10:40	1
d3-NMeFOSAA	77		50 - 150	11/03/21 03:40	11/05/21 10:40	1
d5-NEtFOSAA	73		50 - 150	11/03/21 03:40	11/05/21 10:40	1
13C3 HFPO-DA	77		50 - 150	11/03/21 03:40	11/05/21 10:40	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

**Client Sample ID: PW-211**

**Lab Sample ID: 320-81057-13**

**Date Collected: 10/26/21 16:15**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		11/03/21 03:40	11/05/21 10:50	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/03/21 03:40	11/05/21 10:50	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.84	ng/L		11/03/21 03:40	11/05/21 10:50	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/03/21 03:40	11/05/21 10:50	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/03/21 03:40	11/05/21 10:50	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/03/21 03:40	11/05/21 10:50	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/03/21 03:40	11/05/21 10:50	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/03/21 03:40	11/05/21 10:50	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.72	ng/L		11/03/21 03:40	11/05/21 10:50	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.51</b>	<b>J</b>	2.0	0.20	ng/L		11/03/21 03:40	11/05/21 10:50	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		11/03/21 03:40	11/05/21 10:50	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.74</b>	<b>J</b>	2.0	0.54	ng/L		11/03/21 03:40	11/05/21 10:50	1
<b>N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)</b>	<b>2.2</b>	<b>J</b>	5.0	1.2	ng/L		11/03/21 03:40	11/05/21 10:50	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/03/21 03:40	11/05/21 10:50	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/03/21 03:40	11/05/21 10:50	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/03/21 03:40	11/05/21 10:50	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/03/21 03:40	11/05/21 10:50	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/03/21 03:40	11/05/21 10:50	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	84		50 - 150	11/03/21 03:40	11/05/21 10:50	1
13C4 PFHpA	94		50 - 150	11/03/21 03:40	11/05/21 10:50	1
13C4 PFOA	101		50 - 150	11/03/21 03:40	11/05/21 10:50	1
13C5 PFNA	98		50 - 150	11/03/21 03:40	11/05/21 10:50	1
13C2 PFDA	92		50 - 150	11/03/21 03:40	11/05/21 10:50	1
13C2 PFUnA	83		50 - 150	11/03/21 03:40	11/05/21 10:50	1
13C2 PFDoA	94		50 - 150	11/03/21 03:40	11/05/21 10:50	1
13C2 PFTeDA	77		50 - 150	11/03/21 03:40	11/05/21 10:50	1
13C3 PFBS	94		50 - 150	11/03/21 03:40	11/05/21 10:50	1
18O2 PFHxS	87		50 - 150	11/03/21 03:40	11/05/21 10:50	1
13C4 PFOS	88		50 - 150	11/03/21 03:40	11/05/21 10:50	1
d3-NMeFOSAA	79		50 - 150	11/03/21 03:40	11/05/21 10:50	1
d5-NEtFOSAA	72		50 - 150	11/03/21 03:40	11/05/21 10:50	1
13C3 HFPO-DA	82		50 - 150	11/03/21 03:40	11/05/21 10:50	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

**Client Sample ID: PW-059**

**Lab Sample ID: 320-81057-14**

**Date Collected: 10/27/21 17:09**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	2.3		2.0	0.58	ng/L		11/03/21 03:40	11/05/21 11:00	1
Perfluoroheptanoic acid (PFHpA)	1.5	J	2.0	0.25	ng/L		11/03/21 03:40	11/05/21 11:00	1
Perfluorooctanoic acid (PFOA)	5.3		2.0	0.85	ng/L		11/03/21 03:40	11/05/21 11:00	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/03/21 03:40	11/05/21 11:00	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/03/21 03:40	11/05/21 11:00	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/03/21 03:40	11/05/21 11:00	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/03/21 03:40	11/05/21 11:00	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/03/21 03:40	11/05/21 11:00	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		11/03/21 03:40	11/05/21 11:00	1
Perfluorobutanesulfonic acid (PFBS)	1.6	J	2.0	0.20	ng/L		11/03/21 03:40	11/05/21 11:00	1
Perfluorohexanesulfonic acid (PFHxS)	1.4	J	2.0	0.57	ng/L		11/03/21 03:40	11/05/21 11:00	1
Perfluorooctanesulfonic acid (PFOS)	1.4	J I	2.0	0.54	ng/L		11/03/21 03:40	11/05/21 11:00	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		11/03/21 03:40	11/05/21 11:00	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/03/21 03:40	11/05/21 11:00	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/03/21 03:40	11/05/21 11:00	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/03/21 03:40	11/05/21 11:00	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/03/21 03:40	11/05/21 11:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/03/21 03:40	11/05/21 11:00	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	85		50 - 150	11/03/21 03:40	11/05/21 11:00	1
13C4 PFHpA	96		50 - 150	11/03/21 03:40	11/05/21 11:00	1
13C4 PFOA	92		50 - 150	11/03/21 03:40	11/05/21 11:00	1
13C5 PFNA	92		50 - 150	11/03/21 03:40	11/05/21 11:00	1
13C2 PFDA	86		50 - 150	11/03/21 03:40	11/05/21 11:00	1
13C2 PFUnA	86		50 - 150	11/03/21 03:40	11/05/21 11:00	1
13C2 PFDoA	101		50 - 150	11/03/21 03:40	11/05/21 11:00	1
13C2 PFTeDA	94		50 - 150	11/03/21 03:40	11/05/21 11:00	1
13C3 PFBS	95		50 - 150	11/03/21 03:40	11/05/21 11:00	1
18O2 PFHxS	90		50 - 150	11/03/21 03:40	11/05/21 11:00	1
13C4 PFOS	91		50 - 150	11/03/21 03:40	11/05/21 11:00	1
d3-NMeFOSAA	78		50 - 150	11/03/21 03:40	11/05/21 11:00	1
d5-NEtFOSAA	74		50 - 150	11/03/21 03:40	11/05/21 11:00	1
13C3 HFPO-DA	86		50 - 150	11/03/21 03:40	11/05/21 11:00	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

**Client Sample ID: PW-159**

**Lab Sample ID: 320-81057-15**

**Date Collected: 10/27/21 16:59**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	2.5		2.0	0.57	ng/L		11/03/21 03:40	11/05/21 11:10	1
Perfluoroheptanoic acid (PFHpA)	1.7	J	2.0	0.25	ng/L		11/03/21 03:40	11/05/21 11:10	1
Perfluorooctanoic acid (PFOA)	5.3		2.0	0.84	ng/L		11/03/21 03:40	11/05/21 11:10	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/03/21 03:40	11/05/21 11:10	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.30	ng/L		11/03/21 03:40	11/05/21 11:10	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/03/21 03:40	11/05/21 11:10	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		11/03/21 03:40	11/05/21 11:10	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/03/21 03:40	11/05/21 11:10	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.72	ng/L		11/03/21 03:40	11/05/21 11:10	1
Perfluorobutanesulfonic acid (PFBS)	1.7	J	2.0	0.20	ng/L		11/03/21 03:40	11/05/21 11:10	1
Perfluorohexanesulfonic acid (PFHxS)	1.5	J	2.0	0.56	ng/L		11/03/21 03:40	11/05/21 11:10	1
Perfluorooctanesulfonic acid (PFOS)	1.2	J	2.0	0.53	ng/L		11/03/21 03:40	11/05/21 11:10	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		11/03/21 03:40	11/05/21 11:10	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		11/03/21 03:40	11/05/21 11:10	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/03/21 03:40	11/05/21 11:10	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		11/03/21 03:40	11/05/21 11:10	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.31	ng/L		11/03/21 03:40	11/05/21 11:10	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		11/03/21 03:40	11/05/21 11:10	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C2 PFHxA	77		50 - 150				11/03/21 03:40	11/05/21 11:10	1
13C4 PFHpA	86		50 - 150				11/03/21 03:40	11/05/21 11:10	1
13C4 PFOA	92		50 - 150				11/03/21 03:40	11/05/21 11:10	1
13C5 PFNA	84		50 - 150				11/03/21 03:40	11/05/21 11:10	1
13C2 PFDA	83		50 - 150				11/03/21 03:40	11/05/21 11:10	1
13C2 PFUnA	89		50 - 150				11/03/21 03:40	11/05/21 11:10	1
13C2 PFDoA	94		50 - 150				11/03/21 03:40	11/05/21 11:10	1
13C2 PFTeDA	90		50 - 150				11/03/21 03:40	11/05/21 11:10	1
13C3 PFBS	90		50 - 150				11/03/21 03:40	11/05/21 11:10	1
18O2 PFHxS	86		50 - 150				11/03/21 03:40	11/05/21 11:10	1
13C4 PFOS	87		50 - 150				11/03/21 03:40	11/05/21 11:10	1
d3-NMeFOSAA	74		50 - 150				11/03/21 03:40	11/05/21 11:10	1
d5-NEtFOSAA	72		50 - 150				11/03/21 03:40	11/05/21 11:10	1
13C3 HFPO-DA	76		50 - 150				11/03/21 03:40	11/05/21 11:10	1

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDaA (50-150)	PFTDA (50-150)
320-81057-1	PW-205.1	83	93	88	89	90	84	97	95
320-81057-2	PW-305.1	82	88	93	89	88	86	98	100
320-81057-3	PW-010	78	90	92	89	88	91	96	88
320-81057-4	PW-414	91	89	93	94	92	88	98	92
320-81057-5	PW-221	97	97	100	101	99	95	108	100
320-81057-6	PW-401	78	85	86	84	84	82	85	74
320-81057-7	PW-039	85	84	87	85	87	80	91	75
320-81057-8	PW-040	76	92	94	93	84	81	94	95
320-81057-9	PW-037	86	92	96	95	88	91	100	94
320-81057-10	PW-038	84	93	93	96	93	88	102	102
320-81057-11	PW-012	80	87	90	87	91	83	93	82
320-81057-12	PW-112	86	89	94	89	90	88	94	82
320-81057-13	PW-211	84	94	101	98	92	83	94	77
320-81057-14	PW-059	85	96	92	92	86	86	101	94
320-81057-15	PW-159	77	86	92	84	83	89	94	90
LCS 320-539424/2-A	Lab Control Sample	88	94	94	95	95	86	105	97
LCSD 320-539424/3-A	Lab Control Sample Dup	80	82	89	84	82	72	87	90
MB 320-539424/1-A	Method Blank	88	96	102	98	97	94	103	103

		Percent Isotope Dilution Recovery (Acceptance Limits)					
Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-81057-1	PW-205.1	93	89	86	78	81	81
320-81057-2	PW-305.1	85	82	92	85	85	72
320-81057-3	PW-010	86	84	84	83	79	79
320-81057-4	PW-414	98	90	94	79	82	81
320-81057-5	PW-221	101	97	100	87	84	91
320-81057-6	PW-401	86	79	85	70	67	73
320-81057-7	PW-039	89	84	86	74	73	76
320-81057-8	PW-040	92	87	93	77	83	77
320-81057-9	PW-037	93	89	93	80	80	85
320-81057-10	PW-038	94	95	99	83	87	79
320-81057-11	PW-012	82	87	88	75	72	76
320-81057-12	PW-112	90	82	83	77	73	77
320-81057-13	PW-211	94	87	88	79	72	82
320-81057-14	PW-059	95	90	91	78	74	86
320-81057-15	PW-159	90	86	87	74	72	76
LCS 320-539424/2-A	Lab Control Sample	89	89	96	85	81	82
LCSD 320-539424/3-A	Lab Control Sample Dup	87	79	90	73	77	76
MB 320-539424/1-A	Method Blank	92	96	99	87	86	83

**Surrogate Legend**

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc

Project/Site: Q4 GST PW

PFHxS = 18O2 PFHxS

PFOS = 13C4 PFOS

d3NMFOS = d3-NMeFOSAA

d5NEFOS = d5-NEtFOSAA

HFPODA = 13C3 HFPO-DA

Job ID: 320-81057-1

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-539424/1-A**  
**Matrix: Water**  
**Analysis Batch: 539980**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 539424**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		11/03/21 03:40	11/05/21 07:58	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/03/21 03:40	11/05/21 07:58	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		11/03/21 03:40	11/05/21 07:58	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/03/21 03:40	11/05/21 07:58	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/03/21 03:40	11/05/21 07:58	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/03/21 03:40	11/05/21 07:58	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/03/21 03:40	11/05/21 07:58	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/03/21 03:40	11/05/21 07:58	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		11/03/21 03:40	11/05/21 07:58	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/03/21 03:40	11/05/21 07:58	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		11/03/21 03:40	11/05/21 07:58	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		11/03/21 03:40	11/05/21 07:58	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		11/03/21 03:40	11/05/21 07:58	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/03/21 03:40	11/05/21 07:58	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/03/21 03:40	11/05/21 07:58	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/03/21 03:40	11/05/21 07:58	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/03/21 03:40	11/05/21 07:58	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/03/21 03:40	11/05/21 07:58	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	88		50 - 150	11/03/21 03:40	11/05/21 07:58	1
13C4 PFHpA	96		50 - 150	11/03/21 03:40	11/05/21 07:58	1
13C4 PFOA	102		50 - 150	11/03/21 03:40	11/05/21 07:58	1
13C5 PFNA	98		50 - 150	11/03/21 03:40	11/05/21 07:58	1
13C2 PFDA	97		50 - 150	11/03/21 03:40	11/05/21 07:58	1
13C2 PFUnA	94		50 - 150	11/03/21 03:40	11/05/21 07:58	1
13C2 PFDoA	103		50 - 150	11/03/21 03:40	11/05/21 07:58	1
13C2 PFTeDA	103		50 - 150	11/03/21 03:40	11/05/21 07:58	1
13C3 PFBS	92		50 - 150	11/03/21 03:40	11/05/21 07:58	1
18O2 PFHxS	96		50 - 150	11/03/21 03:40	11/05/21 07:58	1
13C4 PFOS	99		50 - 150	11/03/21 03:40	11/05/21 07:58	1
d3-NMeFOSAA	87		50 - 150	11/03/21 03:40	11/05/21 07:58	1
d5-NEtFOSAA	86		50 - 150	11/03/21 03:40	11/05/21 07:58	1
13C3 HFPO-DA	83		50 - 150	11/03/21 03:40	11/05/21 07:58	1

**Lab Sample ID: LCS 320-539424/2-A**  
**Matrix: Water**  
**Analysis Batch: 539980**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 539424**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluoroheptanoic acid (PFHpA)	40.0	41.6		ng/L		104	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	38.1		ng/L		95	71 - 133
Perfluorononanoic acid (PFNA)	40.0	37.9		ng/L		95	69 - 130

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-539424/2-A**  
**Matrix: Water**  
**Analysis Batch: 539980**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 539424**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	38.4		ng/L		96	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	39.9		ng/L		100	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	38.4		ng/L		96	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	38.6		ng/L		97	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	38.7		ng/L		97	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	32.6		ng/L		92	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.1		ng/L		91	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	33.7		ng/L		91	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	35.3		ng/L		88	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.2		ng/L		98	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	35.3		ng/L		95	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.6		ng/L		107	72 - 132
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	38.0		ng/L		101	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	34.6		ng/L		92	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	88		50 - 150
13C4 PFHpA	94		50 - 150
13C4 PFOA	94		50 - 150
13C5 PFNA	95		50 - 150
13C2 PFDA	95		50 - 150
13C2 PFUnA	86		50 - 150
13C2 PFDoA	105		50 - 150
13C2 PFTeDA	97		50 - 150
13C3 PFBS	89		50 - 150
18O2 PFHxS	89		50 - 150
13C4 PFOS	96		50 - 150
d3-NMeFOSAA	85		50 - 150
d5-NEtFOSAA	81		50 - 150
13C3 HFPO-DA	82		50 - 150

**Lab Sample ID: LCSD 320-539424/3-A**  
**Matrix: Water**  
**Analysis Batch: 539980**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 539424**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	
								RPD	Limit
Perfluorohexanoic acid (PFHxA)	40.0	42.9		ng/L		107	72 - 129	9	30
Perfluoroheptanoic acid (PFHpA)	40.0	41.2		ng/L		103	72 - 130	1	30
Perfluorooctanoic acid (PFOA)	40.0	36.2		ng/L		91	71 - 133	5	30

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-539424/3-A**  
**Matrix: Water**  
**Analysis Batch: 539980**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 539424**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	39.9		ng/L		100	69 - 130	5	30
Perfluorodecanoic acid (PFDA)	40.0	39.9		ng/L		100	71 - 129	4	30
Perfluoroundecanoic acid (PFUnA)	40.0	42.1		ng/L		105	69 - 133	5	30
Perfluorododecanoic acid (PFDoA)	40.0	40.3		ng/L		101	72 - 134	5	30
Perfluorotridecanoic acid (PFTriA)	40.0	41.8		ng/L		104	65 - 144	8	30
Perfluorotetradecanoic acid (PFTeA)	40.0	38.6		ng/L		96	71 - 132	0	30
Perfluorobutanesulfonic acid (PFBS)	35.4	31.5		ng/L		89	72 - 130	3	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.4		ng/L		95	68 - 131	4	30
Perfluorooctanesulfonic acid (PFOS)	37.1	33.1		ng/L		89	65 - 140	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	38.9		ng/L		97	65 - 136	10	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	37.9		ng/L		95	61 - 135	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	31.5		ng/L		84	77 - 137	11	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.0		ng/L		100	72 - 132	6	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	34.2		ng/L		91	76 - 136	11	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	35.6		ng/L		94	81 - 141	3	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	80		50 - 150
13C4 PFHpA	82		50 - 150
13C4 PFOA	89		50 - 150
13C5 PFNA	84		50 - 150
13C2 PFDA	82		50 - 150
13C2 PFUnA	72		50 - 150
13C2 PFDoA	87		50 - 150
13C2 PFTeDA	90		50 - 150
13C3 PFBS	87		50 - 150
18O2 PFHxS	79		50 - 150
13C4 PFOS	90		50 - 150
d3-NMeFOSAA	73		50 - 150
d5-NEtFOSAA	77		50 - 150
13C3 HFPO-DA	76		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

## LCMS

### Prep Batch: 539424

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-81057-1	PW-205.1	Total/NA	Water	3535	
320-81057-2	PW-305.1	Total/NA	Water	3535	
320-81057-3	PW-010	Total/NA	Water	3535	
320-81057-4	PW-414	Total/NA	Water	3535	
320-81057-5	PW-221	Total/NA	Water	3535	
320-81057-6	PW-401	Total/NA	Water	3535	
320-81057-7	PW-039	Total/NA	Water	3535	
320-81057-8	PW-040	Total/NA	Water	3535	
320-81057-9	PW-037	Total/NA	Water	3535	
320-81057-10	PW-038	Total/NA	Water	3535	
320-81057-11	PW-012	Total/NA	Water	3535	
320-81057-12	PW-112	Total/NA	Water	3535	
320-81057-13	PW-211	Total/NA	Water	3535	
320-81057-14	PW-059	Total/NA	Water	3535	
320-81057-15	PW-159	Total/NA	Water	3535	
MB 320-539424/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-539424/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-539424/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 539980

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-81057-1	PW-205.1	Total/NA	Water	EPA 537(Mod)	539424
320-81057-2	PW-305.1	Total/NA	Water	EPA 537(Mod)	539424
320-81057-3	PW-010	Total/NA	Water	EPA 537(Mod)	539424
320-81057-4	PW-414	Total/NA	Water	EPA 537(Mod)	539424
320-81057-5	PW-221	Total/NA	Water	EPA 537(Mod)	539424
320-81057-6	PW-401	Total/NA	Water	EPA 537(Mod)	539424
320-81057-7	PW-039	Total/NA	Water	EPA 537(Mod)	539424
320-81057-8	PW-040	Total/NA	Water	EPA 537(Mod)	539424
320-81057-9	PW-037	Total/NA	Water	EPA 537(Mod)	539424
320-81057-10	PW-038	Total/NA	Water	EPA 537(Mod)	539424
320-81057-11	PW-012	Total/NA	Water	EPA 537(Mod)	539424
320-81057-12	PW-112	Total/NA	Water	EPA 537(Mod)	539424
320-81057-13	PW-211	Total/NA	Water	EPA 537(Mod)	539424
320-81057-14	PW-059	Total/NA	Water	EPA 537(Mod)	539424
320-81057-15	PW-159	Total/NA	Water	EPA 537(Mod)	539424
MB 320-539424/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	539424
LCS 320-539424/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	539424
LCSD 320-539424/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	539424



# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

## Client Sample ID: PW-205.1

Date Collected: 10/25/21 11:55

Date Received: 10/29/21 15:04

## Lab Sample ID: 320-81057-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			273.5 mL	10.0 mL	539424	11/03/21 03:40	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			539980	11/05/21 08:28	S1M	TAL SAC

## Client Sample ID: PW-305.1

Date Collected: 10/25/21 11:45

Date Received: 10/29/21 15:04

## Lab Sample ID: 320-81057-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265.9 mL	10.0 mL	539424	11/03/21 03:40	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			539980	11/05/21 08:38	S1M	TAL SAC

## Client Sample ID: PW-010

Date Collected: 10/25/21 16:55

Date Received: 10/29/21 15:04

## Lab Sample ID: 320-81057-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			257.6 mL	10.0 mL	539424	11/03/21 03:40	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			539980	11/05/21 08:48	S1M	TAL SAC

## Client Sample ID: PW-414

Date Collected: 10/25/21 17:42

Date Received: 10/29/21 15:04

## Lab Sample ID: 320-81057-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			255.9 mL	10.0 mL	539424	11/03/21 03:40	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			539980	11/05/21 08:58	S1M	TAL SAC

## Client Sample ID: PW-221

Date Collected: 10/26/21 10:32

Date Received: 10/29/21 15:04

## Lab Sample ID: 320-81057-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			257.2 mL	10.0 mL	539424	11/03/21 03:40	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			539980	11/05/21 09:09	S1M	TAL SAC

## Client Sample ID: PW-401

Date Collected: 10/26/21 11:15

Date Received: 10/29/21 15:04

## Lab Sample ID: 320-81057-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			263.8 mL	10.0 mL	539424	11/03/21 03:40	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			539980	11/05/21 09:19	S1M	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

**Client Sample ID: PW-039**

**Date Collected: 10/26/21 12:51**

**Date Received: 10/29/21 15:04**

**Lab Sample ID: 320-81057-7**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			257.5 mL	10.0 mL	539424	11/03/21 03:40	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			539980	11/05/21 09:29	S1M	TAL SAC

**Client Sample ID: PW-040**

**Date Collected: 10/26/21 13:18**

**Date Received: 10/29/21 15:04**

**Lab Sample ID: 320-81057-8**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			245.6 mL	10.0 mL	539424	11/03/21 03:40	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			539980	11/05/21 09:59	S1M	TAL SAC

**Client Sample ID: PW-037**

**Date Collected: 10/26/21 12:27**

**Date Received: 10/29/21 15:04**

**Lab Sample ID: 320-81057-9**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			238.8 mL	10.0 mL	539424	11/03/21 03:40	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			539980	11/05/21 10:09	S1M	TAL SAC

**Client Sample ID: PW-038**

**Date Collected: 10/26/21 13:45**

**Date Received: 10/29/21 15:04**

**Lab Sample ID: 320-81057-10**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			258.2 mL	10.0 mL	539424	11/03/21 03:40	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			539980	11/05/21 10:19	S1M	TAL SAC

**Client Sample ID: PW-012**

**Date Collected: 10/26/21 15:24**

**Date Received: 10/29/21 15:04**

**Lab Sample ID: 320-81057-11**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264.1 mL	10.0 mL	539424	11/03/21 03:40	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			539980	11/05/21 10:29	S1M	TAL SAC

**Client Sample ID: PW-112**

**Date Collected: 10/26/21 15:14**

**Date Received: 10/29/21 15:04**

**Lab Sample ID: 320-81057-12**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			261 mL	10.0 mL	539424	11/03/21 03:40	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			539980	11/05/21 10:40	S1M	TAL SAC

Eurofins TestAmerica, Sacramento

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

**Client Sample ID: PW-211**

**Date Collected: 10/26/21 16:15**

**Date Received: 10/29/21 15:04**

**Lab Sample ID: 320-81057-13**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			252.1 mL	10.0 mL	539424	11/03/21 03:40	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			539980	11/05/21 10:50	S1M	TAL SAC

**Client Sample ID: PW-059**

**Date Collected: 10/27/21 17:09**

**Date Received: 10/29/21 15:04**

**Lab Sample ID: 320-81057-14**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			251.3 mL	10.0 mL	539424	11/03/21 03:40	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			539980	11/05/21 11:00	S1M	TAL SAC

**Client Sample ID: PW-159**

**Date Collected: 10/27/21 16:59**

**Date Received: 10/29/21 15:04**

**Lab Sample ID: 320-81057-15**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			254.3 mL	10.0 mL	539424	11/03/21 03:40	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			539980	11/05/21 11:10	S1M	TAL SAC

**Laboratory References:**

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

## Laboratory: Eurofins TestAmerica, Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

1

2

3

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# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	TAL SAC TAL SAC

**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST PW

Job ID: 320-81057-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-81057-1	PW-205.1	Water	10/25/21 11:55	10/29/21 15:04
320-81057-2	PW-305.1	Water	10/25/21 11:45	10/29/21 15:04
320-81057-3	PW-010	Water	10/25/21 16:55	10/29/21 15:04
320-81057-4	PW-414	Water	10/25/21 17:42	10/29/21 15:04
320-81057-5	PW-221	Water	10/26/21 10:32	10/29/21 15:04
320-81057-6	PW-401	Water	10/26/21 11:15	10/29/21 15:04
320-81057-7	PW-039	Water	10/26/21 12:51	10/29/21 15:04
320-81057-8	PW-040	Water	10/26/21 13:18	10/29/21 15:04
320-81057-9	PW-037	Water	10/26/21 12:27	10/29/21 15:04
320-81057-10	PW-038	Water	10/26/21 13:45	10/29/21 15:04
320-81057-11	PW-012	Water	10/26/21 15:24	10/29/21 15:04
320-81057-12	PW-112	Water	10/26/21 15:14	10/29/21 15:04
320-81057-13	PW-211	Water	10/26/21 16:15	10/29/21 15:04
320-81057-14	PW-059	Water	10/27/21 17:09	10/29/21 15:04
320-81057-15	PW-159	Water	10/27/21 16:59	10/29/21 15:04

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# CHAIN-OF-CUSTODY RECORD

Page 1 of 2  
 Laboratory TEST AMERICA  
 Attn: David Alltucker

Analytical Methods (include preservative if used)

Quote No: \_\_\_\_\_

Turn Around Time:  Normal  Rush

J-Flags:  Yes  No

Please Specify \_\_\_\_\_

Total Number of Containers

PTAS - 18 analytes  
(Gr: 2, M: 5, ST: 1)

Sample Identity	Lab No.	Time	Date Sampled	Remarks/Matrix Composition/Grab? Sample Containers
PW-205.1		1155	10/25/21	Ground water - <u>PTAS</u>
PW-305.1		1145		
PW-010		1655		
PW-414		1742		
<del>PW-016</del>		<del>0808</del>	10/26/21	
PW-221		1032		
PW-401		1115		
PW-038		1227		
PW-039		1251		
PW-040		1318		



**Project Information**

Number: 102599-020

Name: Q4 GST PW

Contact: Kristen

Ongoing Project? Yes  No

Sampler: VTV

**Sample Receipt**

Total No. of Containers: 206

COC Seals/Intact? Y/N/NA

Received Good Cond./Cold

Temp:

Delivery Method: goldstreak

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: <u>[Signature]</u> Printed Name: <u>Veselina Jatinoviq</u> Company: <u>Shannon &amp; Wilson</u>	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____
Time: <u>0800</u> Date: <u>10/25/21</u>	Time: _____ Date: _____	Time: _____ Date: _____
Received By: 1. Signature: <u>[Signature]</u> Printed Name: <u>Silverman</u> Company: _____	Received By: 2. Signature: _____ Printed Name: _____ Company: _____	Received By: 3. Signature: _____ Printed Name: _____ Company: _____
Time: <u>1501</u> Date: <u>10/25/21</u>	Time: _____ Date: _____	Time: _____ Date: _____

**Notes:**

\_\_\_\_\_

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file

# CHAIN-OF-CUSTODY RECORD

Analytical Methods (include preservative if used)

Turn Around Time:  
 Normal  Rush  
 Please Specify

Quote No:  
 MSA Number:  
 J-Flags:  Yes  No

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PW-037		1227	10/26/21	2	Groundwater - Private well
PW-038		1345		2	
PW-012		1524		2	
PW-112		1514		2	
PW-211		1615		2	
PW-059		1709	10/27/21	2	
PW-159		1659		2	

PTAS-Branthys  
 5371 (T-12ms)

**Project Information**  
 Number: 102599-020  
 Name: Q4 GST-PW  
 Contact: Kristen  
 Ongoing Project? Yes  No   
 Sampler: VVI

**Sample Receipt**  
 Total No of Containers: 256  
 COC Seals/Intact? Y/N/NA  
 Received Good Cond /Cold  
 Temp:  
 Delivery Method: goodstreak

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: [Signature] Printed Name: Veredua Jakimov Company: Shannon & Wilson	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____
Time: 0800 Date: 10/26/21	Time: _____ Date: _____	Time: _____ Date: _____
Received By: 1. Signature: [Signature] Printed Name: Shawn Wilson Company: Shannon & Wilson	Received By: 2. Signature: _____ Printed Name: _____ Company: _____	Received By: 3. Signature: _____ Printed Name: _____ Company: _____
Time: 1212/14 Date: 1504	Time: _____ Date: _____	Time: _____ Date: _____

**Notes:**

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file

containing lists from as 10/12, 10/10-29-21





# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-81057-1

**Login Number: 81057**

**List Number: 1**

**Creator: Cahill, Nicholas P**

**List Source: Eurofins TestAmerica, Sacramento**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	False	IDs on containers do not match the COC. Logged in per COC.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Laboratory Data Review Checklist

Completed By:

Justin Risley

Title:

Engineering Staff

Date:

November 12, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-81057-1

Laboratory Report Date:

11/10/2021

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

Laboratory Report Date:

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

Analyses were performed by the Eurofins Laboratory in West Sacramento, CA. The laboratory is approved by the DEC CS program and certified under the Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP) for the requested analyses.

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

The requested analyses were conducted by TestAmerica of West Sacramento, CA.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

Samples do not require preservation other than temperature.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form notes that the samples were received in good condition.

Laboratory Report Date:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes  No  N/A  Comments:

The sample receipt form notes a discrepancy between the Sample ID on the COC and bottle. See below in the case narrative for additional details.

- e. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

4. Case Narrative

- a. Present and understandable?

Yes  No  N/A  Comments:

Laboratory Report Date:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

The case narrative indicates the following:

The container label for the following sample(s) did not match the information listed on the Chain-of-Custody (COC): sample 13. The container labels list the sample time as 16:12 while the COC lists it as 16:15. Logged and labeled according to COC. *PW-211*. The results are unaffected by this discrepancy.

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte.

Results flagged with the "I" qualifier are considered estimated with no direction of bias and have been flagged 'J' in the table and analytical database to denote the uncertainty. This applies to PFOS in sample *PW-059*.

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-539424.

Method 3535: The following sample contained floating particulates in the sample bottle prior to extraction: *PW-205.1*

Method 3535: The following samples were yellow prior to extraction: *PW-010* (320-81057-3), *PW-221*, *PW-401*, *PW-039*, *PW-037*, *PW-012*, *PW-112*, *PW-211*, *PW-059* and *PW-159*.

Method 3535: The following samples contained a thin layer of sediment at the bottom of the bottle prior to extraction: *PW-010*, *PW-221*, *PW-401*, *PW-037*, *PW-012*, *PW-112*, *PW-059* and *PW-159*.

Method 3535: The following samples were preserved with trizma: *PW-205.1*, *PW-305.1*, *PW-010*, *PW-414*, *PW-221*, *PW-401*, *PW-039*, *PW-040*, *PW-037*, *PW-038*, *PW-012*, *PW-112*, *PW-211*, *PW-059* and *PW-159*. Thus, the MB, LCS and LCSD also contain trizma.

Method 3535: The following sample was light yellow after extraction/final volume: *PW-037* (320-81057-9).

Method 3535: Elevated reporting limits are provided for the following samples due to insufficient sample provided for preparation: *PW-040* and *PW-037*.

c. Were all corrective actions documented?

Yes  No  N/A  Comments:

See above.

Laboratory Report Date:

- d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not note an effect on data quality or usability. See the following sections for our assessment.

5. Samples Results

- a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

- b. All applicable holding times met?

Yes  No  N/A  Comments:

- c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not submitted with this work order.

- d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

The reporting limit (RL) is less than the applicable DEC regulatory limit for the project.

- e. Data quality or usability affected?

The data quality and/or usability was not affected; see above.

6. QC Samples

- a. Method Blank

- i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

- ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

There were no detections in the method blank sample associated with these project samples.

Laboratory Report Date:

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A  Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; see above.

Laboratory Report Date:

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

A MS/MSD was not analyzed with this work order; however, the laboratory analyzed LCS and LCSD samples to assess laboratory accuracy and precision.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; MS and MSD samples were not analyzed for this work order.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.



Laboratory Report Date:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes  No  N/A  Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A  Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

iv. Data quality or usability affected?

Comments:

The data quality and/or usability was affected; see above.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes  No  N/A  Comments:

PFAS are not volatile compounds. A trip blank is not required for the requested analysis.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

Laboratory Report Date:

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; a trip blank is not required for the requested analysis.

v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

ii. Submitted blind to lab?

Yes  No  N/A  Comments:Field duplicate pairs *PW-205.1/PW-305.1*, *PW-059/PW-159*, and *PW-012/PW-112* were submitted with this work order.iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration $R_2$  = Field Duplicate ConcentrationYes  No  N/A  Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and/or usability was not affected; see above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

Reusable equipment was not used in the sampling procedure; therefore, an equipment blank is unnecessary.

i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

Laboratory Report Date:

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

iii. Data quality or usability affected?

Comments:

No; see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A

Comments:

## ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

Laboratory Job ID: 320-81261-1  
Client Project/Site: Q4 PW DOT&PF

For:  
Shannon & Wilson, Inc  
2355 Hill Rd.  
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger



---

Authorized for release by:  
11/12/2021 4:13:44 PM

David Alltucker, Project Manager I  
(916)374-4383  
[David.Alltucker@Eurofinset.com](mailto:David.Alltucker@Eurofinset.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.eurofinsus.com/Env](http://www.eurofinsus.com/Env)

*The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 PW DOT&PF

Job ID: 320-81261-1

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: Q4 PW DOT&PF

Job ID: 320-81261-1

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## Job ID: 320-81261-1

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### Laboratory: Eurofins TestAmerica, Sacramento

#### Narrative

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#### Job Narrative 320-81261-1

#### Receipt

The samples were received on 11/3/2021 2:01 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.5° C.

#### Receipt Exceptions

COC was not relinquished by sender. PW-203 (320-81261-1) and PW-303 (320-81261-2)

#### LCMS

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-541444.

Method 3535: The following samples are yellow and contain a thin layer of sediment at the bottom of the bottle prior to extraction: PW-203 (320-81261-1) and PW-303 (320-81261-2).

Method 3535: The following samples contain trizma: PW-203 (320-81261-1) and PW-303 (320-81261-2). Therefore, the MB, LCS, and LCSD also contain trizma.

PW-203 (320-81261-1) and PW-303 (320-81261-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 PW DOT&PF

Job ID: 320-81261-1

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**Client Sample ID: PW-203**

**Lab Sample ID: 320-81261-1**

No Detections.

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**Client Sample ID: PW-303**

**Lab Sample ID: 320-81261-2**

No Detections.

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This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 PW DOT&PF

Job ID: 320-81261-1

**Client Sample ID: PW-203**

**Lab Sample ID: 320-81261-1**

**Date Collected: 10/31/21 15:15**

**Matrix: Water**

**Date Received: 11/03/21 14:01**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		11/09/21 19:00	11/10/21 19:12	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		11/09/21 19:00	11/10/21 19:12	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		11/09/21 19:00	11/10/21 19:12	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/09/21 19:00	11/10/21 19:12	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/09/21 19:00	11/10/21 19:12	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		11/09/21 19:00	11/10/21 19:12	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		11/09/21 19:00	11/10/21 19:12	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/09/21 19:00	11/10/21 19:12	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		11/09/21 19:00	11/10/21 19:12	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/09/21 19:00	11/10/21 19:12	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		11/09/21 19:00	11/10/21 19:12	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		11/09/21 19:00	11/10/21 19:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/09/21 19:00	11/10/21 19:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/09/21 19:00	11/10/21 19:12	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		11/09/21 19:00	11/10/21 19:12	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		11/09/21 19:00	11/10/21 19:12	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/09/21 19:00	11/10/21 19:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/09/21 19:00	11/10/21 19:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	102		50 - 150	11/09/21 19:00	11/10/21 19:12	1
13C4 PFHpA	107		50 - 150	11/09/21 19:00	11/10/21 19:12	1
13C4 PFOA	99		50 - 150	11/09/21 19:00	11/10/21 19:12	1
13C5 PFNA	102		50 - 150	11/09/21 19:00	11/10/21 19:12	1
13C2 PFDA	103		50 - 150	11/09/21 19:00	11/10/21 19:12	1
13C2 PFUnA	97		50 - 150	11/09/21 19:00	11/10/21 19:12	1
13C2 PFDoA	90		50 - 150	11/09/21 19:00	11/10/21 19:12	1
13C2 PFTeDA	91		50 - 150	11/09/21 19:00	11/10/21 19:12	1
13C3 PFBS	113		50 - 150	11/09/21 19:00	11/10/21 19:12	1
18O2 PFHxS	104		50 - 150	11/09/21 19:00	11/10/21 19:12	1
13C4 PFOS	105		50 - 150	11/09/21 19:00	11/10/21 19:12	1
d3-NMeFOSAA	96		50 - 150	11/09/21 19:00	11/10/21 19:12	1
d5-NEtFOSAA	91		50 - 150	11/09/21 19:00	11/10/21 19:12	1
13C3 HFPO-DA	100		50 - 150	11/09/21 19:00	11/10/21 19:12	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 PW DOT&PF

Job ID: 320-81261-1

**Client Sample ID: PW-303**

**Lab Sample ID: 320-81261-2**

**Date Collected: 10/31/21 15:05**

**Matrix: Water**

**Date Received: 11/03/21 14:01**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51	ng/L		11/09/21 19:00	11/10/21 19:22	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		11/09/21 19:00	11/10/21 19:22	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		11/09/21 19:00	11/10/21 19:22	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/09/21 19:00	11/10/21 19:22	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		11/09/21 19:00	11/10/21 19:22	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.96	ng/L		11/09/21 19:00	11/10/21 19:22	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		11/09/21 19:00	11/10/21 19:22	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		11/09/21 19:00	11/10/21 19:22	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		11/09/21 19:00	11/10/21 19:22	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/09/21 19:00	11/10/21 19:22	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.50	ng/L		11/09/21 19:00	11/10/21 19:22	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.47	ng/L		11/09/21 19:00	11/10/21 19:22	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		11/09/21 19:00	11/10/21 19:22	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		11/09/21 19:00	11/10/21 19:22	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		11/09/21 19:00	11/10/21 19:22	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		11/09/21 19:00	11/10/21 19:22	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		11/09/21 19:00	11/10/21 19:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		11/09/21 19:00	11/10/21 19:22	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	106		50 - 150	11/09/21 19:00	11/10/21 19:22	1
13C4 PFHpA	99		50 - 150	11/09/21 19:00	11/10/21 19:22	1
13C4 PFOA	109		50 - 150	11/09/21 19:00	11/10/21 19:22	1
13C5 PFNA	105		50 - 150	11/09/21 19:00	11/10/21 19:22	1
13C2 PFDA	110		50 - 150	11/09/21 19:00	11/10/21 19:22	1
13C2 PFUnA	97		50 - 150	11/09/21 19:00	11/10/21 19:22	1
13C2 PFDoA	98		50 - 150	11/09/21 19:00	11/10/21 19:22	1
13C2 PFTeDA	90		50 - 150	11/09/21 19:00	11/10/21 19:22	1
13C3 PFBS	127		50 - 150	11/09/21 19:00	11/10/21 19:22	1
18O2 PFHxS	101		50 - 150	11/09/21 19:00	11/10/21 19:22	1
13C4 PFOS	108		50 - 150	11/09/21 19:00	11/10/21 19:22	1
d3-NMeFOSAA	101		50 - 150	11/09/21 19:00	11/10/21 19:22	1
d5-NEtFOSAA	96		50 - 150	11/09/21 19:00	11/10/21 19:22	1
13C3 HFPO-DA	111		50 - 150	11/09/21 19:00	11/10/21 19:22	1

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: Q4 PW DOT&PF

Job ID: 320-81261-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDaA (50-150)	PFTDA (50-150)
320-81261-1	PW-203	102	107	99	102	103	97	90	91
320-81261-2	PW-303	106	99	109	105	110	97	98	90
LCS 320-541444/2-A	Lab Control Sample	106	99	105	96	94	89	85	93
LCSD 320-541444/3-A	Lab Control Sample Dup	107	104	101	106	93	93	90	97
MB 320-541444/1-A	Method Blank	100	100	100	89	90	87	83	86

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-81261-1	PW-203	113	104	105	96	91	100
320-81261-2	PW-303	127	101	108	101	96	111
LCS 320-541444/2-A	Lab Control Sample	117	99	98	89	89	100
LCSD 320-541444/3-A	Lab Control Sample Dup	123	108	104	92	87	103
MB 320-541444/1-A	Method Blank	117	97	89	89	82	91

#### Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 PW DOT&PF

Job ID: 320-81261-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-541444/1-A**  
**Matrix: Water**  
**Analysis Batch: 541776**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 541444**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		11/09/21 19:00	11/10/21 18:40	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/09/21 19:00	11/10/21 18:40	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		11/09/21 19:00	11/10/21 18:40	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/09/21 19:00	11/10/21 18:40	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/09/21 19:00	11/10/21 18:40	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/09/21 19:00	11/10/21 18:40	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/09/21 19:00	11/10/21 18:40	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/09/21 19:00	11/10/21 18:40	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		11/09/21 19:00	11/10/21 18:40	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/09/21 19:00	11/10/21 18:40	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		11/09/21 19:00	11/10/21 18:40	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		11/09/21 19:00	11/10/21 18:40	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		11/09/21 19:00	11/10/21 18:40	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/09/21 19:00	11/10/21 18:40	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/09/21 19:00	11/10/21 18:40	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/09/21 19:00	11/10/21 18:40	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/09/21 19:00	11/10/21 18:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/09/21 19:00	11/10/21 18:40	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	100		50 - 150	11/09/21 19:00	11/10/21 18:40	1
13C4 PFHpA	100		50 - 150	11/09/21 19:00	11/10/21 18:40	1
13C4 PFOA	100		50 - 150	11/09/21 19:00	11/10/21 18:40	1
13C5 PFNA	89		50 - 150	11/09/21 19:00	11/10/21 18:40	1
13C2 PFDA	90		50 - 150	11/09/21 19:00	11/10/21 18:40	1
13C2 PFUnA	87		50 - 150	11/09/21 19:00	11/10/21 18:40	1
13C2 PFDoA	83		50 - 150	11/09/21 19:00	11/10/21 18:40	1
13C2 PFTeDA	86		50 - 150	11/09/21 19:00	11/10/21 18:40	1
13C3 PFBS	117		50 - 150	11/09/21 19:00	11/10/21 18:40	1
18O2 PFHxS	97		50 - 150	11/09/21 19:00	11/10/21 18:40	1
13C4 PFOS	89		50 - 150	11/09/21 19:00	11/10/21 18:40	1
d3-NMeFOSAA	89		50 - 150	11/09/21 19:00	11/10/21 18:40	1
d5-NEtFOSAA	82		50 - 150	11/09/21 19:00	11/10/21 18:40	1
13C3 HFPO-DA	91		50 - 150	11/09/21 19:00	11/10/21 18:40	1

**Lab Sample ID: LCS 320-541444/2-A**  
**Matrix: Water**  
**Analysis Batch: 541776**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 541444**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluoroheptanoic acid (PFHpA)	40.0	38.2		ng/L		96	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	36.5		ng/L		91	71 - 133
Perfluorononanoic acid (PFNA)	40.0	37.2		ng/L		93	69 - 130

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 PW DOT&PF

Job ID: 320-81261-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-541444/2-A**  
**Matrix: Water**  
**Analysis Batch: 541776**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 541444**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	40.2		ng/L		100	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	39.0		ng/L		97	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	43.8		ng/L		109	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	44.0		ng/L		110	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	36.2		ng/L		90	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	29.8		ng/L		84	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.3		ng/L		97	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	36.1		ng/L		97	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	33.2		ng/L		83	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	38.7		ng/L		97	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	32.5		ng/L		87	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.8		ng/L		102	72 - 132
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	31.9		ng/L		85	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	38.2		ng/L		101	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	106		50 - 150
13C4 PFHpA	99		50 - 150
13C4 PFOA	105		50 - 150
13C5 PFNA	96		50 - 150
13C2 PFDA	94		50 - 150
13C2 PFUnA	89		50 - 150
13C2 PFDoA	85		50 - 150
13C2 PFTeDA	93		50 - 150
13C3 PFBS	117		50 - 150
18O2 PFHxS	99		50 - 150
13C4 PFOS	98		50 - 150
d3-NMeFOSAA	89		50 - 150
d5-NEtFOSAA	89		50 - 150
13C3 HFPO-DA	100		50 - 150

**Lab Sample ID: LCSD 320-541444/3-A**  
**Matrix: Water**  
**Analysis Batch: 541776**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 541444**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		RPD Limit
							Limits	RPD	
Perfluorohexanoic acid (PFHxA)	40.0	35.3		ng/L		88	72 - 129	7	30
Perfluoroheptanoic acid (PFHpA)	40.0	39.9		ng/L		100	72 - 130	4	30
Perfluorooctanoic acid (PFOA)	40.0	40.1		ng/L		100	71 - 133	10	30

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: Q4 PW DOT&PF

Job ID: 320-81261-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-541444/3-A**  
**Matrix: Water**  
**Analysis Batch: 541776**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 541444**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	34.8		ng/L		87	69 - 130	7	30
Perfluorodecanoic acid (PFDA)	40.0	39.5		ng/L		99	71 - 129	2	30
Perfluoroundecanoic acid (PFUnA)	40.0	38.3		ng/L		96	69 - 133	2	30
Perfluorododecanoic acid (PFDoA)	40.0	41.1		ng/L		103	72 - 134	6	30
Perfluorotridecanoic acid (PFTriA)	40.0	38.8		ng/L		97	65 - 144	13	30
Perfluorotetradecanoic acid (PFTeA)	40.0	34.5		ng/L		86	71 - 132	5	30
Perfluorobutanesulfonic acid (PFBS)	35.4	30.6		ng/L		87	72 - 130	3	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.5		ng/L		95	68 - 131	2	30
Perfluorooctanesulfonic acid (PFOS)	37.1	34.6		ng/L		93	65 - 140	4	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	34.5		ng/L		86	65 - 136	4	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.1		ng/L		105	61 - 135	8	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	32.6		ng/L		87	77 - 137	0	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	38.3		ng/L		96	72 - 132	6	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	31.4		ng/L		83	76 - 136	2	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	36.2		ng/L		96	81 - 141	5	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	107		50 - 150
13C4 PFHpA	104		50 - 150
13C4 PFOA	101		50 - 150
13C5 PFNA	106		50 - 150
13C2 PFDA	93		50 - 150
13C2 PFUnA	93		50 - 150
13C2 PFDoA	90		50 - 150
13C2 PFTeDA	97		50 - 150
13C3 PFBS	123		50 - 150
18O2 PFHxS	108		50 - 150
13C4 PFOS	104		50 - 150
d3-NMeFOSAA	92		50 - 150
d5-NEtFOSAA	87		50 - 150
13C3 HFPO-DA	103		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 PW DOT&PF

Job ID: 320-81261-1

## LCMS

### Prep Batch: 541444

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-81261-1	PW-203	Total/NA	Water	3535	
320-81261-2	PW-303	Total/NA	Water	3535	
MB 320-541444/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-541444/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-541444/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 541776

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-81261-1	PW-203	Total/NA	Water	EPA 537(Mod)	541444
320-81261-2	PW-303	Total/NA	Water	EPA 537(Mod)	541444
MB 320-541444/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	541444
LCS 320-541444/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	541444
LCSD 320-541444/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	541444

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: Q4 PW DOT&PF

Job ID: 320-81261-1

**Client Sample ID: PW-203**  
**Date Collected: 10/31/21 15:15**  
**Date Received: 11/03/21 14:01**

**Lab Sample ID: 320-81261-1**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			279.7 mL	10.0 mL	541444	11/09/21 19:00	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			541776	11/10/21 19:12	S1M	TAL SAC

**Client Sample ID: PW-303**  
**Date Collected: 10/31/21 15:05**  
**Date Received: 11/03/21 14:01**

**Lab Sample ID: 320-81261-2**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			285.1 mL	10.0 mL	541444	11/09/21 19:00	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			541776	11/10/21 19:22	S1M	TAL SAC

**Laboratory References:**

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 PW DOT&PF

Job ID: 320-81261-1

## Laboratory: Eurofins TestAmerica, Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

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# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 PW DOT&PF

Job ID: 320-81261-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	TAL SAC TAL SAC

#### Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 PW DOT&PF

Job ID: 320-81261-1

---

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-81261-1	PW-203	Water	10/31/21 15:15	11/03/21 14:01
320-81261-2	PW-303	Water	10/31/21 15:05	11/03/21 14:01

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TAL-8210

Regulatory Program:  DW  NPDES  RCRA  Other: **ASPRAS-537.1 (Trism)**

Client Contact: **Shannon & Wilson**  
 Project Manager: **David Allford**  
 Site Contact: **Kristin Felbuser**  
 Tel/Email: \_\_\_\_\_ Date: \_\_\_\_\_  
 Lab Contact: \_\_\_\_\_ Carrier: \_\_\_\_\_

Company Name: **Shannon & Wilson**  
 Address: **2353 Hill Road**  
 City/State/Zip: **Box, AR 94701**  
 Phone: \_\_\_\_\_  
 Fax: \_\_\_\_\_  
 Project Name: **04 PW DOTEPE**  
 Site: \_\_\_\_\_  
 P O # \_\_\_\_\_

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Sample Specific Notes:
PW-203	10/31/21	1515	G	W	2			
PW-303	10/31/21	1505	G	W	2			

Analysis Turnaround Time:  CALENDAR DAYS  WORKING DAYS  
 TAT if different from Below:  2 weeks  1 week  2 days  1 day

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other **1**

Possible Hazard Identification: \_\_\_\_\_ Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Special Instructions/QC Requirements & Comments: \_\_\_\_\_

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)  
 Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

Custody Seal No.: **1509662150465** Cooler Temp. (°C): **2.5°C** Corr'd: **0.5°C** Therm ID No.: **1505**

Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Relinquished by: **[Signature]** Date/Time: **11/30/21 1401**  
 Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-81261-1

**Login Number: 81261**

**List Number: 1**

**Creator: Cahill, Nicholas P**

**List Source: Eurofins TestAmerica, Sacramento**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1504662/1504663
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	Refer to Job Narrative for details.
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Laboratory Data Review Checklist

Completed By:

Justin Risley

Title:

Engineering Staff

Date:

November 15, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-81261-1

Laboratory Report Date:

11/12/2021

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

Laboratory Report Date:

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

Analyses were performed by the Eurofins TestAmerica Laboratory in West Sacramento, CA. The laboratory is approved by the DEC CS program and certified under the Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP) for the requested analyses.

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

The requested analyses were conducted by Eurofins TestAmerica of West Sacramento, CA.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

According to the case narrative, the “COC was not relinquished by sender.” The released by information is not present.

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

Samples do not require preservation other than temperature.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form notes that the samples were received in good condition.

Laboratory Report Date:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes  No  N/A  Comments:

The sample receipt form notes a missing COC signature. See below in the case narrative for additional details.

- e. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

4. Case Narrative

- a. Present and understandable?

Yes  No  N/A  Comments:

- b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

The case narrative indicates the following:

COC was not relinquished by sender. PW-203 and PW-303

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-541444.

Method 3535: The following samples are yellow and contain a thin layer of sediment at the bottom of the bottle prior to extraction: PW-203 and PW-303.

Method 3535: The following samples contain trizma: PW-203 and PW-303. Therefore, the MB, LCS, and LCSD also contain trizma. PW-203 and PW-303.

- c. Were all corrective actions documented?

Yes  No  N/A  Comments:

N/A; see above.



Laboratory Report Date:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not note an effect on data quality or usability. Please note we do not consider the results to be affected by the absence of the signature to relinquish the samples. We spoke with the sender and the samples remained in custody within a cooler noted with proper COC procedures in place.

See the following sections for our assessment.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

The reporting limit (RL) is less than the applicable DEC regulatory limit for the project.

e. Data quality or usability affected?

The data quality and/or usability was not affected; see above.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Laboratory Report Date:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

There were no detections in the method blank sample associated with these project samples.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A  Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

Laboratory Report Date:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; see above.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

- c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

- i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

A MS/MSD was not analyzed with this work order; however, the laboratory analyzed LCS and LCSD samples to assess laboratory accuracy and precision.

- ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; MS and MSD samples were not analyzed for this work order.

Laboratory Report Date:

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes  No  N/A  Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A  Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

iv. Data quality or usability affected?

Comments:

The data quality and/or usability was affected; see above.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes  No  N/A  Comments:

PFAS are not volatile compounds. A trip blank is not required for the requested analysis.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

Laboratory Report Date:

iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; a trip blank is not required for the requested analysis.

v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

ii. Submitted blind to lab?

Yes  No  N/A  Comments:Field duplicate pair *PW-203/PW-303* were submitted with this work order.iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration $R_2$  = Field Duplicate ConcentrationYes  No  N/A  Comments:

N/A; we were unable to calculate an RPD since no PFAS analytes were detected in the field duplicate pair.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and/or usability was not affected; see above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

Reusable equipment was not used in the sampling procedure; therefore, an equipment blank is unnecessary.

Laboratory Report Date:

i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

iii. Data quality or usability affected?

Comments:

No; see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A  Comments:

## ANALYTICAL REPORT

Eurofins Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

Laboratory Job ID: 320-84759-1  
Client Project/Site: Gustavus Residential

For:  
Shannon & Wilson, Inc  
2355 Hill Rd.  
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger



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Authorized for release by:  
3/4/2022 2:13:15 PM

David Alltucker, Project Manager I  
(916)374-4383  
[David.Alltucker@Eurofinset.com](mailto:David.Alltucker@Eurofinset.com)

### LINKS

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*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus Residential

Job ID: 320-84759-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus Residential

Job ID: 320-84759-1

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## Job ID: 320-84759-1

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### Laboratory: Eurofins Sacramento

#### Narrative

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#### Job Narrative 320-84759-1

#### Receipt

The samples were received on 2/12/2022 10:54 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.8° C.

#### LCMS

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. PW-211 (320-84759-5)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-566059.

Method 3535: The following samples were preserved with trizma: PW-039 (320-84759-1), PW-203 (320-84759-2), PW-2001 (320-84759-3), PW-501 (320-84759-4), PW-211 (320-84759-5), PW-401 (320-84759-6), PW-221 (320-84759-7), NPS Well (320-84759-8), PW-010 (320-84759-9), PW-112 (320-84759-10), PW-012 (320-84759-11), PW-205.1 (320-84759-12), PW-040 (320-84759-13), PW-037 (320-84759-14) and PW-038 (320-84759-15). Thus, the MB, LCS and LCSD also contain trizma

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus Residential

Job ID: 320-84759-1

## Client Sample ID: PW-039

Lab Sample ID: 320-84759-1

No Detections.

## Client Sample ID: PW-203

Lab Sample ID: 320-84759-2

No Detections.

## Client Sample ID: PW-2001

Lab Sample ID: 320-84759-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.8		1.9	0.56	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.6	J	1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.3		1.9	0.83	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.64	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.9		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	8.2		1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-501

Lab Sample ID: 320-84759-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.4	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	17		1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-211

Lab Sample ID: 320-84759-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.68	J	1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.78	J I	1.9	0.52	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-401

Lab Sample ID: 320-84759-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.1	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	15		1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-221

Lab Sample ID: 320-84759-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.61	J	2.0	0.54	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: NPS Well

Lab Sample ID: 320-84759-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.8		2.0	0.57	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.6	J	2.0	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.0		2.0	0.83	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.64	J	2.0	0.20	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.6		2.0	0.56	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	8.3		2.0	0.53	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-010

Lab Sample ID: 320-84759-9

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus Residential

Job ID: 320-84759-1

## Client Sample ID: PW-112

Lab Sample ID: 320-84759-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.67	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.2		1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-012

Lab Sample ID: 320-84759-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.76	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.9		1.9	0.52	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-205.1

Lab Sample ID: 320-84759-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.6	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.5	J	1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.1	J	4.7	1.2	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-040

Lab Sample ID: 320-84759-13

No Detections.

## Client Sample ID: PW-037

Lab Sample ID: 320-84759-14

No Detections.

## Client Sample ID: PW-038

Lab Sample ID: 320-84759-15

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: Gustavus Residential

Job ID: 320-84759-1

**Client Sample ID: PW-039**

**Lab Sample ID: 320-84759-1**

Date Collected 02/ 09/ 22 09:37

Matrix: Water

Date Received 02/ 12/ 22 10:54

**Method EPA 537(Md) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		02/16/22 05:03	02/28/22 02:23	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		02/16/22 05:03	02/28/22 02:23	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		02/16/22 05:03	02/28/22 02:23	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		02/16/22 05:03	02/28/22 02:23	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		02/16/22 05:03	02/28/22 02:23	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		02/16/22 05:03	02/28/22 02:23	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		02/16/22 05:03	02/28/22 02:23	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		02/16/22 05:03	02/28/22 02:23	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		02/16/22 05:03	02/28/22 02:23	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		02/16/22 05:03	02/28/22 02:23	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		02/16/22 05:03	02/28/22 02:23	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		02/16/22 05:03	02/28/22 02:23	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		02/16/22 05:03	02/28/22 02:23	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		02/16/22 05:03	02/28/22 02:23	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		02/16/22 05:03	02/28/22 02:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		02/16/22 05:03	02/28/22 02:23	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		02/16/22 05:03	02/28/22 02:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		02/16/22 05:03	02/28/22 02:23	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	105		50 - 150	02/16/22 05:03	02/28/22 02:23	1
13C4 PFHpA	110		50 - 150	02/16/22 05:03	02/28/22 02:23	1
13C4 PFOA	106		50 - 150	02/16/22 05:03	02/28/22 02:23	1
13C5 PFNA	103		50 - 150	02/16/22 05:03	02/28/22 02:23	1
13C2 PFDA	101		50 - 150	02/16/22 05:03	02/28/22 02:23	1
13C2 PFUnA	106		50 - 150	02/16/22 05:03	02/28/22 02:23	1
13C2 PFDoA	100		50 - 150	02/16/22 05:03	02/28/22 02:23	1
13C2 PFTeDA	88		50 - 150	02/16/22 05:03	02/28/22 02:23	1
13C3 PFBS	109		50 - 150	02/16/22 05:03	02/28/22 02:23	1
18O2 PFHxS	109		50 - 150	02/16/22 05:03	02/28/22 02:23	1
13C4 PFOS	104		50 - 150	02/16/22 05:03	02/28/22 02:23	1
d3-NMeFOSAA	88		50 - 150	02/16/22 05:03	02/28/22 02:23	1
d5-NEtFOSAA	97		50 - 150	02/16/22 05:03	02/28/22 02:23	1
13C3 HFPO-DA	101		50 - 150	02/16/22 05:03	02/28/22 02:23	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: Gustavus Residential

Job ID: 320-84759-1

**Client Sample ID: PW-203**

**Lab Sample ID: 320-84759-2**

**Date Collected 02/ 07/ 22 13:15**

**Matrix: Water**

**Date Received 02/ 12/ 22 10:54**

**Method EPA 537(Md) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		02/16/22 05:03	02/28/22 02:33	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		02/16/22 05:03	02/28/22 02:33	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		02/16/22 05:03	02/28/22 02:33	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		02/16/22 05:03	02/28/22 02:33	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		02/16/22 05:03	02/28/22 02:33	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		02/16/22 05:03	02/28/22 02:33	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		02/16/22 05:03	02/28/22 02:33	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/16/22 05:03	02/28/22 02:33	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		02/16/22 05:03	02/28/22 02:33	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		02/16/22 05:03	02/28/22 02:33	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.54	ng/L		02/16/22 05:03	02/28/22 02:33	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		02/16/22 05:03	02/28/22 02:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		02/16/22 05:03	02/28/22 02:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		02/16/22 05:03	02/28/22 02:33	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		02/16/22 05:03	02/28/22 02:33	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		02/16/22 05:03	02/28/22 02:33	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		02/16/22 05:03	02/28/22 02:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		02/16/22 05:03	02/28/22 02:33	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		50 - 150	02/16/22 05:03	02/28/22 02:33	1
13C4 PFHpA	101		50 - 150	02/16/22 05:03	02/28/22 02:33	1
13C4 PFOA	99		50 - 150	02/16/22 05:03	02/28/22 02:33	1
13C5 PFNA	94		50 - 150	02/16/22 05:03	02/28/22 02:33	1
13C2 PFDA	93		50 - 150	02/16/22 05:03	02/28/22 02:33	1
13C2 PFUnA	88		50 - 150	02/16/22 05:03	02/28/22 02:33	1
13C2 PFDoA	84		50 - 150	02/16/22 05:03	02/28/22 02:33	1
13C2 PFTeDA	84		50 - 150	02/16/22 05:03	02/28/22 02:33	1
13C3 PFBS	96		50 - 150	02/16/22 05:03	02/28/22 02:33	1
18O2 PFHxS	96		50 - 150	02/16/22 05:03	02/28/22 02:33	1
13C4 PFOS	93		50 - 150	02/16/22 05:03	02/28/22 02:33	1
d3-NMeFOSAA	86		50 - 150	02/16/22 05:03	02/28/22 02:33	1
d5-NEtFOSAA	86		50 - 150	02/16/22 05:03	02/28/22 02:33	1
13C3 HFPO-DA	92		50 - 150	02/16/22 05:03	02/28/22 02:33	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus Residential

Job ID: 320-84759-1

**Client Sample ID: PW-2001**

**Lab Sample ID: 320-84759-3**

Date Collected 02/ 08/ 22 09:59

Matrix: Water

Date Received 02/ 12/ 22 10:54

**Method EPA 537(Md) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	2.8		1.9	0.56	ng/L		02/16/22 05:03	02/28/22 02:43	1
Perfluoroheptanoic acid (PFHpA)	1.6	J	1.9	0.24	ng/L		02/16/22 05:03	02/28/22 02:43	1
Perfluorooctanoic acid (PFOA)	2.3		1.9	0.83	ng/L		02/16/22 05:03	02/28/22 02:43	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		02/16/22 05:03	02/28/22 02:43	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		02/16/22 05:03	02/28/22 02:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		02/16/22 05:03	02/28/22 02:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.54	ng/L		02/16/22 05:03	02/28/22 02:43	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		02/16/22 05:03	02/28/22 02:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		02/16/22 05:03	02/28/22 02:43	1
Perfluorobutanesulfonic acid (PFBS)	0.64	J	1.9	0.19	ng/L		02/16/22 05:03	02/28/22 02:43	1
Perfluorohexanesulfonic acid (PFHxS)	6.9		1.9	0.55	ng/L		02/16/22 05:03	02/28/22 02:43	1
Perfluorooctanesulfonic acid (PFOS)	8.2		1.9	0.53	ng/L		02/16/22 05:03	02/28/22 02:43	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		02/16/22 05:03	02/28/22 02:43	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		02/16/22 05:03	02/28/22 02:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		02/16/22 05:03	02/28/22 02:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		02/16/22 05:03	02/28/22 02:43	1
11-Chloroeicosadecafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		02/16/22 05:03	02/28/22 02:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		02/16/22 05:03	02/28/22 02:43	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C2 PFHxA	103		50 - 150				02/16/22 05:03	02/28/22 02:43	1
13C4 PFHpA	104		50 - 150				02/16/22 05:03	02/28/22 02:43	1
13C4 PFOA	102		50 - 150				02/16/22 05:03	02/28/22 02:43	1
13C5 PFNA	96		50 - 150				02/16/22 05:03	02/28/22 02:43	1
13C2 PFDA	89		50 - 150				02/16/22 05:03	02/28/22 02:43	1
13C2 PFUnA	88		50 - 150				02/16/22 05:03	02/28/22 02:43	1
13C2 PFDoA	85		50 - 150				02/16/22 05:03	02/28/22 02:43	1
13C2 PFTeDA	85		50 - 150				02/16/22 05:03	02/28/22 02:43	1
13C3 PFBS	99		50 - 150				02/16/22 05:03	02/28/22 02:43	1
18O2 PFHxS	102		50 - 150				02/16/22 05:03	02/28/22 02:43	1
13C4 PFOS	97		50 - 150				02/16/22 05:03	02/28/22 02:43	1
d3-NMeFOSAA	92		50 - 150				02/16/22 05:03	02/28/22 02:43	1
d5-NEtFOSAA	93		50 - 150				02/16/22 05:03	02/28/22 02:43	1
13C3 HFPO-DA	93		50 - 150				02/16/22 05:03	02/28/22 02:43	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: Gustavus Residential

Job ID: 320-84759-1

**Client Sample ID: PW-501**

**Lab Sample ID: 320-84759-4**

**Date Collected 02/ 07/ 22 14:58**

**Mtrix: Water**

**Date Received 02/ 12/ 22 10:54**

**Method EPA 537(Md) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		02/16/22 05:03	03/02/22 01:31	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		02/16/22 05:03	03/02/22 01:31	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		02/16/22 05:03	03/02/22 01:31	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		02/16/22 05:03	03/02/22 01:31	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		02/16/22 05:03	03/02/22 01:31	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		02/16/22 05:03	03/02/22 01:31	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		02/16/22 05:03	03/02/22 01:31	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/16/22 05:03	03/02/22 01:31	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		02/16/22 05:03	03/02/22 01:31	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		02/16/22 05:03	03/02/22 01:31	1
Perfluorohexanesulfonic acid (PFHxS)	1.4	J	1.9	0.54	ng/L		02/16/22 05:03	03/02/22 01:31	1
Perfluorooctanesulfonic acid (PFOS)	17		1.9	0.51	ng/L		02/16/22 05:03	03/02/22 01:31	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		02/16/22 05:03	03/02/22 01:31	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		02/16/22 05:03	03/02/22 01:31	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		02/16/22 05:03	03/02/22 01:31	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		02/16/22 05:03	03/02/22 01:31	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		02/16/22 05:03	03/02/22 01:31	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		02/16/22 05:03	03/02/22 01:31	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		50 - 150	02/16/22 05:03	03/02/22 01:31	1
13C4 PFHpA	112		50 - 150	02/16/22 05:03	03/02/22 01:31	1
13C4 PFOA	106		50 - 150	02/16/22 05:03	03/02/22 01:31	1
13C5 PFNA	98		50 - 150	02/16/22 05:03	03/02/22 01:31	1
13C2 PFDA	97		50 - 150	02/16/22 05:03	03/02/22 01:31	1
13C2 PFUnA	91		50 - 150	02/16/22 05:03	03/02/22 01:31	1
13C2 PFDoA	96		50 - 150	02/16/22 05:03	03/02/22 01:31	1
13C2 PFTeDA	89		50 - 150	02/16/22 05:03	03/02/22 01:31	1
13C3 PFBS	102		50 - 150	02/16/22 05:03	03/02/22 01:31	1
18O2 PFHxS	99		50 - 150	02/16/22 05:03	03/02/22 01:31	1
13C4 PFOS	98		50 - 150	02/16/22 05:03	03/02/22 01:31	1
d3-NMeFOSAA	98		50 - 150	02/16/22 05:03	03/02/22 01:31	1
d5-NEtFOSAA	103		50 - 150	02/16/22 05:03	03/02/22 01:31	1
13C3 HFPO-DA	105		50 - 150	02/16/22 05:03	03/02/22 01:31	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: Gustavus Residential

Job ID: 320-84759-1

**Client Sample ID: PW-211**

**Lab Sample ID: 320-84759-5**

Date Collected 02/ 07/ 22 13:58

Matrix: Water

Date Received 02/ 12/ 22 10:54

**Method EPA 537(Md) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.56	ng/L		02/16/22 05:03	02/28/22 03:04	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		02/16/22 05:03	02/28/22 03:04	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		02/16/22 05:03	02/28/22 03:04	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		02/16/22 05:03	02/28/22 03:04	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		02/16/22 05:03	02/28/22 03:04	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		02/16/22 05:03	02/28/22 03:04	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		02/16/22 05:03	02/28/22 03:04	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		02/16/22 05:03	02/28/22 03:04	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		02/16/22 05:03	02/28/22 03:04	1
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.9	0.19	ng/L		02/16/22 05:03	02/28/22 03:04	1
Perfluorohexanesulfonic acid (PFHxS)	0.68	J	1.9	0.55	ng/L		02/16/22 05:03	02/28/22 03:04	1
Perfluorooctanesulfonic acid (PFOS)	0.78	J I	1.9	0.52	ng/L		02/16/22 05:03	02/28/22 03:04	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		02/16/22 05:03	02/28/22 03:04	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.8	1.3	ng/L		02/16/22 05:03	02/28/22 03:04	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		02/16/22 05:03	02/28/22 03:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.4	ng/L		02/16/22 05:03	02/28/22 03:04	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		02/16/22 05:03	02/28/22 03:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		02/16/22 05:03	02/28/22 03:04	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		50 - 150				02/16/22 05:03	02/28/22 03:04	1
13C4 PFHpA	102		50 - 150				02/16/22 05:03	02/28/22 03:04	1
13C4 PFOA	104		50 - 150				02/16/22 05:03	02/28/22 03:04	1
13C5 PFNA	99		50 - 150				02/16/22 05:03	02/28/22 03:04	1
13C2 PFDA	88		50 - 150				02/16/22 05:03	02/28/22 03:04	1
13C2 PFUnA	84		50 - 150				02/16/22 05:03	02/28/22 03:04	1
13C2 PFDoA	85		50 - 150				02/16/22 05:03	02/28/22 03:04	1
13C2 PFTeDA	86		50 - 150				02/16/22 05:03	02/28/22 03:04	1
13C3 PFBS	100		50 - 150				02/16/22 05:03	02/28/22 03:04	1
18O2 PFHxS	99		50 - 150				02/16/22 05:03	02/28/22 03:04	1
13C4 PFOS	94		50 - 150				02/16/22 05:03	02/28/22 03:04	1
d3-NMeFOSAA	82		50 - 150				02/16/22 05:03	02/28/22 03:04	1
d5-NEtFOSAA	91		50 - 150				02/16/22 05:03	02/28/22 03:04	1
13C3 HFPO-DA	92		50 - 150				02/16/22 05:03	02/28/22 03:04	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: Gustavus Residential

Job ID: 320-84759-1

**Client Sample ID: PW-401**  
**Date Collected 02/ 07/ 22 14:58**  
**Date Received 02/ 12/ 22 10:54**

**Lab Sample ID: 320-84759-6**  
**Matrix: Water**

**Method EPA 537(Md) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		02/16/22 05:03	02/28/22 03:14	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		02/16/22 05:03	02/28/22 03:14	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		02/16/22 05:03	02/28/22 03:14	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		02/16/22 05:03	02/28/22 03:14	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		02/16/22 05:03	02/28/22 03:14	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		02/16/22 05:03	02/28/22 03:14	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		02/16/22 05:03	02/28/22 03:14	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/16/22 05:03	02/28/22 03:14	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		02/16/22 05:03	02/28/22 03:14	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		02/16/22 05:03	02/28/22 03:14	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>1.1</b>	<b>J</b>	1.9	0.54	ng/L		02/16/22 05:03	02/28/22 03:14	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>15</b>		1.9	0.51	ng/L		02/16/22 05:03	02/28/22 03:14	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		02/16/22 05:03	02/28/22 03:14	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		02/16/22 05:03	02/28/22 03:14	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		02/16/22 05:03	02/28/22 03:14	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		02/16/22 05:03	02/28/22 03:14	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		02/16/22 05:03	02/28/22 03:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		02/16/22 05:03	02/28/22 03:14	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	84		50 - 150	02/16/22 05:03	02/28/22 03:14	1
13C4 PFHpA	88		50 - 150	02/16/22 05:03	02/28/22 03:14	1
13C4 PFOA	92		50 - 150	02/16/22 05:03	02/28/22 03:14	1
13C5 PFNA	87		50 - 150	02/16/22 05:03	02/28/22 03:14	1
13C2 PFDA	85		50 - 150	02/16/22 05:03	02/28/22 03:14	1
13C2 PFUnA	81		50 - 150	02/16/22 05:03	02/28/22 03:14	1
13C2 PFDoA	78		50 - 150	02/16/22 05:03	02/28/22 03:14	1
13C2 PFTeDA	67		50 - 150	02/16/22 05:03	02/28/22 03:14	1
13C3 PFBS	90		50 - 150	02/16/22 05:03	02/28/22 03:14	1
18O2 PFHxS	87		50 - 150	02/16/22 05:03	02/28/22 03:14	1
13C4 PFOS	93		50 - 150	02/16/22 05:03	02/28/22 03:14	1
d3-NMeFOSAA	72		50 - 150	02/16/22 05:03	02/28/22 03:14	1
d5-NEtFOSAA	77		50 - 150	02/16/22 05:03	02/28/22 03:14	1
13C3 HFPO-DA	78		50 - 150	02/16/22 05:03	02/28/22 03:14	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus Residential

Job ID: 320-84759-1

**Client Sample ID: PW-221**

**Lab Sample ID: 320-84759-7**

Date Collected 02/ 07/ 22 16:18

Matrix: Water

Date Received 02/ 12/ 22 10:54

**Method EPA 537(Md) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		02/16/22 05:03	02/28/22 03:24	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		02/16/22 05:03	02/28/22 03:24	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		02/16/22 05:03	02/28/22 03:24	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		02/16/22 05:03	02/28/22 03:24	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		02/16/22 05:03	02/28/22 03:24	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		02/16/22 05:03	02/28/22 03:24	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		02/16/22 05:03	02/28/22 03:24	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		02/16/22 05:03	02/28/22 03:24	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		02/16/22 05:03	02/28/22 03:24	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		02/16/22 05:03	02/28/22 03:24	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		02/16/22 05:03	02/28/22 03:24	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.61</b>	<b>J</b>	2.0	0.54	ng/L		02/16/22 05:03	02/28/22 03:24	1
N-methylperfluorooctanesulfonamide acid (NMeFOSAA)	ND		5.0	1.2	ng/L		02/16/22 05:03	02/28/22 03:24	1
N-ethylperfluorooctanesulfonamide acid (NEtFOSAA)	ND		5.0	1.3	ng/L		02/16/22 05:03	02/28/22 03:24	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		02/16/22 05:03	02/28/22 03:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		02/16/22 05:03	02/28/22 03:24	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		02/16/22 05:03	02/28/22 03:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		02/16/22 05:03	02/28/22 03:24	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	98		50 - 150	02/16/22 05:03	02/28/22 03:24	1
13C4 PFHpA	97		50 - 150	02/16/22 05:03	02/28/22 03:24	1
13C4 PFOA	99		50 - 150	02/16/22 05:03	02/28/22 03:24	1
13C5 PFNA	91		50 - 150	02/16/22 05:03	02/28/22 03:24	1
13C2 PFDA	84		50 - 150	02/16/22 05:03	02/28/22 03:24	1
13C2 PFUnA	83		50 - 150	02/16/22 05:03	02/28/22 03:24	1
13C2 PFDoA	83		50 - 150	02/16/22 05:03	02/28/22 03:24	1
13C2 PFTeDA	71		50 - 150	02/16/22 05:03	02/28/22 03:24	1
13C3 PFBS	93		50 - 150	02/16/22 05:03	02/28/22 03:24	1
18O2 PFHxS	94		50 - 150	02/16/22 05:03	02/28/22 03:24	1
13C4 PFOS	90		50 - 150	02/16/22 05:03	02/28/22 03:24	1
d3-NMeFOSAA	79		50 - 150	02/16/22 05:03	02/28/22 03:24	1
d5-NEtFOSAA	76		50 - 150	02/16/22 05:03	02/28/22 03:24	1
13C3 HFPO-DA	84		50 - 150	02/16/22 05:03	02/28/22 03:24	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus Residential

Job ID: 320-84759-1

**Client Sample ID: NPS Well**

**Lab Sample ID: 320-84759-8**

Date Collected 02/ 08/ 22 10:09

Matrix: Water

Date Received 02/ 12/ 22 10:54

**Method EPA 537(Md) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	2.8		2.0	0.57	ng/L		02/16/22 05:03	02/28/22 03:54	1
Perfluoroheptanoic acid (PFHpA)	1.6	J	2.0	0.24	ng/L		02/16/22 05:03	02/28/22 03:54	1
Perfluorooctanoic acid (PFOA)	2.0		2.0	0.83	ng/L		02/16/22 05:03	02/28/22 03:54	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.26	ng/L		02/16/22 05:03	02/28/22 03:54	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.30	ng/L		02/16/22 05:03	02/28/22 03:54	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		02/16/22 05:03	02/28/22 03:54	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		02/16/22 05:03	02/28/22 03:54	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		02/16/22 05:03	02/28/22 03:54	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.71	ng/L		02/16/22 05:03	02/28/22 03:54	1
Perfluorobutanesulfonic acid (PFBS)	0.64	J	2.0	0.20	ng/L		02/16/22 05:03	02/28/22 03:54	1
Perfluorohexanesulfonic acid (PFHxS)	6.6		2.0	0.56	ng/L		02/16/22 05:03	02/28/22 03:54	1
Perfluorooctanesulfonic acid (PFOS)	8.3		2.0	0.53	ng/L		02/16/22 05:03	02/28/22 03:54	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		02/16/22 05:03	02/28/22 03:54	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		02/16/22 05:03	02/28/22 03:54	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.23	ng/L		02/16/22 05:03	02/28/22 03:54	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		02/16/22 05:03	02/28/22 03:54	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.31	ng/L		02/16/22 05:03	02/28/22 03:54	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		02/16/22 05:03	02/28/22 03:54	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C2 PFHxA	100		50 - 150				02/16/22 05:03	02/28/22 03:54	1
13C4 PFHpA	99		50 - 150				02/16/22 05:03	02/28/22 03:54	1
13C4 PFOA	101		50 - 150				02/16/22 05:03	02/28/22 03:54	1
13C5 PFNA	95		50 - 150				02/16/22 05:03	02/28/22 03:54	1
13C2 PFDA	92		50 - 150				02/16/22 05:03	02/28/22 03:54	1
13C2 PFUnA	84		50 - 150				02/16/22 05:03	02/28/22 03:54	1
13C2 PFDoA	84		50 - 150				02/16/22 05:03	02/28/22 03:54	1
13C2 PFTeDA	81		50 - 150				02/16/22 05:03	02/28/22 03:54	1
13C3 PFBS	106		50 - 150				02/16/22 05:03	02/28/22 03:54	1
18O2 PFHxS	99		50 - 150				02/16/22 05:03	02/28/22 03:54	1
13C4 PFOS	93		50 - 150				02/16/22 05:03	02/28/22 03:54	1
d3-NMeFOSAA	83		50 - 150				02/16/22 05:03	02/28/22 03:54	1
d5-NEtFOSAA	89		50 - 150				02/16/22 05:03	02/28/22 03:54	1
13C3 HFPO-DA	94		50 - 150				02/16/22 05:03	02/28/22 03:54	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus Residential

Job ID: 320-84759-1

**Client Sample ID: PW-01 0**

**Lab Sample ID: 320-84759-9**

Date Collected 02/ 08/ 22 09:06

Matrix: Water

Date Received 02/ 12/ 22 10:54

**Method EPA 537(Md) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.57	ng/L		02/16/22 05:03	02/28/22 04:04	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		02/16/22 05:03	02/28/22 04:04	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.84	ng/L		02/16/22 05:03	02/28/22 04:04	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		02/16/22 05:03	02/28/22 04:04	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		02/16/22 05:03	02/28/22 04:04	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		02/16/22 05:03	02/28/22 04:04	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		02/16/22 05:03	02/28/22 04:04	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		02/16/22 05:03	02/28/22 04:04	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.72	ng/L		02/16/22 05:03	02/28/22 04:04	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		02/16/22 05:03	02/28/22 04:04	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.56	ng/L		02/16/22 05:03	02/28/22 04:04	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.53	ng/L		02/16/22 05:03	02/28/22 04:04	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		02/16/22 05:03	02/28/22 04:04	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		02/16/22 05:03	02/28/22 04:04	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		02/16/22 05:03	02/28/22 04:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		02/16/22 05:03	02/28/22 04:04	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.31	ng/L		02/16/22 05:03	02/28/22 04:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		02/16/22 05:03	02/28/22 04:04	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		50 - 150	02/16/22 05:03	02/28/22 04:04	1
13C4 PFHpA	100		50 - 150	02/16/22 05:03	02/28/22 04:04	1
13C4 PFOA	98		50 - 150	02/16/22 05:03	02/28/22 04:04	1
13C5 PFNA	90		50 - 150	02/16/22 05:03	02/28/22 04:04	1
13C2 PFDA	87		50 - 150	02/16/22 05:03	02/28/22 04:04	1
13C2 PFUnA	86		50 - 150	02/16/22 05:03	02/28/22 04:04	1
13C2 PFDoA	92		50 - 150	02/16/22 05:03	02/28/22 04:04	1
13C2 PFTeDA	86		50 - 150	02/16/22 05:03	02/28/22 04:04	1
13C3 PFBS	93		50 - 150	02/16/22 05:03	02/28/22 04:04	1
18O2 PFHxS	92		50 - 150	02/16/22 05:03	02/28/22 04:04	1
13C4 PFOS	95		50 - 150	02/16/22 05:03	02/28/22 04:04	1
d3-NMeFOSAA	91		50 - 150	02/16/22 05:03	02/28/22 04:04	1
d5-NEtFOSAA	95		50 - 150	02/16/22 05:03	02/28/22 04:04	1
13C3 HFPO-DA	87		50 - 150	02/16/22 05:03	02/28/22 04:04	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus Residential

Job ID: 320-84759-1

**Client Sample ID: PW-11 2**

**Lab Sample ID: 320-84759-1 0**

Date Collected 02/ 09/ 22 12:15

Matrix: Water

Date Received 02/ 12/ 22 10:54

**Method EPA 537(Md) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		02/16/22 05:03	02/28/22 04:14	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		02/16/22 05:03	02/28/22 04:14	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		02/16/22 05:03	02/28/22 04:14	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		02/16/22 05:03	02/28/22 04:14	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		02/16/22 05:03	02/28/22 04:14	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		02/16/22 05:03	02/28/22 04:14	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		02/16/22 05:03	02/28/22 04:14	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/16/22 05:03	02/28/22 04:14	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		02/16/22 05:03	02/28/22 04:14	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		02/16/22 05:03	02/28/22 04:14	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.67</b>	<b>J</b>	1.9	0.54	ng/L		02/16/22 05:03	02/28/22 04:14	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>2.2</b>		1.9	0.51	ng/L		02/16/22 05:03	02/28/22 04:14	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		02/16/22 05:03	02/28/22 04:14	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		02/16/22 05:03	02/28/22 04:14	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		02/16/22 05:03	02/28/22 04:14	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		02/16/22 05:03	02/28/22 04:14	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		02/16/22 05:03	02/28/22 04:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		02/16/22 05:03	02/28/22 04:14	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		50 - 150	02/16/22 05:03	02/28/22 04:14	1
13C4 PFHpA	106		50 - 150	02/16/22 05:03	02/28/22 04:14	1
13C4 PFOA	102		50 - 150	02/16/22 05:03	02/28/22 04:14	1
13C5 PFNA	93		50 - 150	02/16/22 05:03	02/28/22 04:14	1
13C2 PFDA	91		50 - 150	02/16/22 05:03	02/28/22 04:14	1
13C2 PFUnA	92		50 - 150	02/16/22 05:03	02/28/22 04:14	1
13C2 PFDoA	92		50 - 150	02/16/22 05:03	02/28/22 04:14	1
13C2 PFTeDA	86		50 - 150	02/16/22 05:03	02/28/22 04:14	1
13C3 PFBS	105		50 - 150	02/16/22 05:03	02/28/22 04:14	1
18O2 PFHxS	103		50 - 150	02/16/22 05:03	02/28/22 04:14	1
13C4 PFOS	97		50 - 150	02/16/22 05:03	02/28/22 04:14	1
d3-NMeFOSAA	86		50 - 150	02/16/22 05:03	02/28/22 04:14	1
d5-NEtFOSAA	89		50 - 150	02/16/22 05:03	02/28/22 04:14	1
13C3 HFPO-DA	90		50 - 150	02/16/22 05:03	02/28/22 04:14	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus Residential

Job ID: 320-84759-1

**Client Sample ID: PW-01 2**

**Lab Sample ID: 320-84759-11**

Date Collected 02/ 09/ 22 12:25

Matrix: Water

Date Received 02/ 12/ 22 10:54

**Method EPA 537(Md) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		02/16/22 05:03	02/28/22 04:25	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		02/16/22 05:03	02/28/22 04:25	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		02/16/22 05:03	02/28/22 04:25	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		02/16/22 05:03	02/28/22 04:25	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		02/16/22 05:03	02/28/22 04:25	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		02/16/22 05:03	02/28/22 04:25	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		02/16/22 05:03	02/28/22 04:25	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/16/22 05:03	02/28/22 04:25	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		02/16/22 05:03	02/28/22 04:25	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		02/16/22 05:03	02/28/22 04:25	1
Perfluorohexanesulfonic acid (PFHxS)	0.76	J	1.9	0.54	ng/L		02/16/22 05:03	02/28/22 04:25	1
Perfluorooctanesulfonic acid (PFOS)	1.9		1.9	0.52	ng/L		02/16/22 05:03	02/28/22 04:25	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		02/16/22 05:03	02/28/22 04:25	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		02/16/22 05:03	02/28/22 04:25	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		02/16/22 05:03	02/28/22 04:25	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		02/16/22 05:03	02/28/22 04:25	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		02/16/22 05:03	02/28/22 04:25	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		02/16/22 05:03	02/28/22 04:25	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	99		50 - 150	02/16/22 05:03	02/28/22 04:25	1
13C4 PFHpA	110		50 - 150	02/16/22 05:03	02/28/22 04:25	1
13C4 PFOA	102		50 - 150	02/16/22 05:03	02/28/22 04:25	1
13C5 PFNA	97		50 - 150	02/16/22 05:03	02/28/22 04:25	1
13C2 PFDA	96		50 - 150	02/16/22 05:03	02/28/22 04:25	1
13C2 PFUnA	96		50 - 150	02/16/22 05:03	02/28/22 04:25	1
13C2 PFDoA	91		50 - 150	02/16/22 05:03	02/28/22 04:25	1
13C2 PFTeDA	80		50 - 150	02/16/22 05:03	02/28/22 04:25	1
13C3 PFBS	102		50 - 150	02/16/22 05:03	02/28/22 04:25	1
18O2 PFHxS	107		50 - 150	02/16/22 05:03	02/28/22 04:25	1
13C4 PFOS	101		50 - 150	02/16/22 05:03	02/28/22 04:25	1
d3-NMeFOSAA	93		50 - 150	02/16/22 05:03	02/28/22 04:25	1
d5-NEtFOSAA	90		50 - 150	02/16/22 05:03	02/28/22 04:25	1
13C3 HFPO-DA	93		50 - 150	02/16/22 05:03	02/28/22 04:25	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus Residential

Job ID: 320-84759-1

**Client Sample ID: PW-205. 1**

**Lab Sample ID: 320-84759-1 2**

Date Collected 02/ 08/ 22 11:02

Matrix: Water

Date Received 02/ 12/ 22 10:54

**Method EPA 537(Md) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		02/16/22 05:03	02/28/22 04:35	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		02/16/22 05:03	02/28/22 04:35	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		02/16/22 05:03	02/28/22 04:35	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		02/16/22 05:03	02/28/22 04:35	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		02/16/22 05:03	02/28/22 04:35	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		02/16/22 05:03	02/28/22 04:35	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		02/16/22 05:03	02/28/22 04:35	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/16/22 05:03	02/28/22 04:35	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		02/16/22 05:03	02/28/22 04:35	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		02/16/22 05:03	02/28/22 04:35	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>1.6</b>	<b>J</b>	1.9	0.54	ng/L		02/16/22 05:03	02/28/22 04:35	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>1.5</b>	<b>J</b>	1.9	0.51	ng/L		02/16/22 05:03	02/28/22 04:35	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		02/16/22 05:03	02/28/22 04:35	1
<b>N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)</b>	<b>4.1</b>	<b>J</b>	4.7	1.2	ng/L		02/16/22 05:03	02/28/22 04:35	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		02/16/22 05:03	02/28/22 04:35	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		02/16/22 05:03	02/28/22 04:35	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		02/16/22 05:03	02/28/22 04:35	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		02/16/22 05:03	02/28/22 04:35	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		50 - 150	02/16/22 05:03	02/28/22 04:35	1
13C4 PFHpA	107		50 - 150	02/16/22 05:03	02/28/22 04:35	1
13C4 PFOA	95		50 - 150	02/16/22 05:03	02/28/22 04:35	1
13C5 PFNA	94		50 - 150	02/16/22 05:03	02/28/22 04:35	1
13C2 PFDA	87		50 - 150	02/16/22 05:03	02/28/22 04:35	1
13C2 PFUnA	88		50 - 150	02/16/22 05:03	02/28/22 04:35	1
13C2 PFDoA	94		50 - 150	02/16/22 05:03	02/28/22 04:35	1
13C2 PFTeDA	94		50 - 150	02/16/22 05:03	02/28/22 04:35	1
13C3 PFBS	95		50 - 150	02/16/22 05:03	02/28/22 04:35	1
18O2 PFHxS	97		50 - 150	02/16/22 05:03	02/28/22 04:35	1
13C4 PFOS	95		50 - 150	02/16/22 05:03	02/28/22 04:35	1
d3-NMeFOSAA	82		50 - 150	02/16/22 05:03	02/28/22 04:35	1
d5-NEtFOSAA	90		50 - 150	02/16/22 05:03	02/28/22 04:35	1
13C3 HFPO-DA	80		50 - 150	02/16/22 05:03	02/28/22 04:35	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus Residential

Job ID: 320-84759-1

**Client Sample ID: PW-040**

**Lab Sample ID: 320-84759-1 3**

**Date Collected 02/ 09/ 22 09:12**

**Mtrix: Water**

**Date Received 02/ 12/ 22 10:54**

**Method EPA 537(Md) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		02/16/22 05:03	02/28/22 04:45	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		02/16/22 05:03	02/28/22 04:45	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		02/16/22 05:03	02/28/22 04:45	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		02/16/22 05:03	02/28/22 04:45	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		02/16/22 05:03	02/28/22 04:45	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		02/16/22 05:03	02/28/22 04:45	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		02/16/22 05:03	02/28/22 04:45	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/16/22 05:03	02/28/22 04:45	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		02/16/22 05:03	02/28/22 04:45	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		02/16/22 05:03	02/28/22 04:45	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.54	ng/L		02/16/22 05:03	02/28/22 04:45	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		02/16/22 05:03	02/28/22 04:45	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		02/16/22 05:03	02/28/22 04:45	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		02/16/22 05:03	02/28/22 04:45	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		02/16/22 05:03	02/28/22 04:45	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		02/16/22 05:03	02/28/22 04:45	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		02/16/22 05:03	02/28/22 04:45	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		02/16/22 05:03	02/28/22 04:45	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		50 - 150	02/16/22 05:03	02/28/22 04:45	1
13C4 PFHpA	93		50 - 150	02/16/22 05:03	02/28/22 04:45	1
13C4 PFOA	98		50 - 150	02/16/22 05:03	02/28/22 04:45	1
13C5 PFNA	90		50 - 150	02/16/22 05:03	02/28/22 04:45	1
13C2 PFDA	86		50 - 150	02/16/22 05:03	02/28/22 04:45	1
13C2 PFUnA	87		50 - 150	02/16/22 05:03	02/28/22 04:45	1
13C2 PFDoA	89		50 - 150	02/16/22 05:03	02/28/22 04:45	1
13C2 PFTeDA	85		50 - 150	02/16/22 05:03	02/28/22 04:45	1
13C3 PFBS	95		50 - 150	02/16/22 05:03	02/28/22 04:45	1
18O2 PFHxS	96		50 - 150	02/16/22 05:03	02/28/22 04:45	1
13C4 PFOS	94		50 - 150	02/16/22 05:03	02/28/22 04:45	1
d3-NMeFOSAA	88		50 - 150	02/16/22 05:03	02/28/22 04:45	1
d5-NEtFOSAA	90		50 - 150	02/16/22 05:03	02/28/22 04:45	1
13C3 HFPO-DA	86		50 - 150	02/16/22 05:03	02/28/22 04:45	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: Gustavus Residential

Job ID: 320-84759-1

**Client Sample ID: PW-037**

**Lab Sample ID: 320-84759-1 4**

**Date Collected 02/ 08/ 22 15:00**

**Matrix: Water**

**Date Received 02/ 12/ 22 10:54**

**Method EPA 537(Md) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.57	ng/L		02/16/22 05:03	02/28/22 04:55	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		02/16/22 05:03	02/28/22 04:55	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.84	ng/L		02/16/22 05:03	02/28/22 04:55	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		02/16/22 05:03	02/28/22 04:55	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		02/16/22 05:03	02/28/22 04:55	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		02/16/22 05:03	02/28/22 04:55	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		02/16/22 05:03	02/28/22 04:55	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		02/16/22 05:03	02/28/22 04:55	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.72	ng/L		02/16/22 05:03	02/28/22 04:55	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		02/16/22 05:03	02/28/22 04:55	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		02/16/22 05:03	02/28/22 04:55	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		02/16/22 05:03	02/28/22 04:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		02/16/22 05:03	02/28/22 04:55	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		02/16/22 05:03	02/28/22 04:55	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		02/16/22 05:03	02/28/22 04:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		02/16/22 05:03	02/28/22 04:55	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		02/16/22 05:03	02/28/22 04:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		02/16/22 05:03	02/28/22 04:55	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	85		50 - 150	02/16/22 05:03	02/28/22 04:55	1
13C4 PFHpA	87		50 - 150	02/16/22 05:03	02/28/22 04:55	1
13C4 PFOA	87		50 - 150	02/16/22 05:03	02/28/22 04:55	1
13C5 PFNA	82		50 - 150	02/16/22 05:03	02/28/22 04:55	1
13C2 PFDA	76		50 - 150	02/16/22 05:03	02/28/22 04:55	1
13C2 PFUnA	81		50 - 150	02/16/22 05:03	02/28/22 04:55	1
13C2 PFDoA	81		50 - 150	02/16/22 05:03	02/28/22 04:55	1
13C2 PFTeDA	80		50 - 150	02/16/22 05:03	02/28/22 04:55	1
13C3 PFBS	85		50 - 150	02/16/22 05:03	02/28/22 04:55	1
18O2 PFHxS	85		50 - 150	02/16/22 05:03	02/28/22 04:55	1
13C4 PFOS	89		50 - 150	02/16/22 05:03	02/28/22 04:55	1
d3-NMeFOSAA	80		50 - 150	02/16/22 05:03	02/28/22 04:55	1
d5-NEtFOSAA	84		50 - 150	02/16/22 05:03	02/28/22 04:55	1
13C3 HFPO-DA	77		50 - 150	02/16/22 05:03	02/28/22 04:55	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: Gustavus Residential

Job ID: 320-84759-1

**Client Sample ID: PW-038**

**Lab Sample ID: 320-84759-1 5**

**Date Collected 02/ 08/ 22 14:30**

**Matrix: Water**

**Date Received 02/ 12/ 22 10:54**

**Method EPA 537(Md) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		02/16/22 05:03	02/28/22 05:05	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		02/16/22 05:03	02/28/22 05:05	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		02/16/22 05:03	02/28/22 05:05	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		02/16/22 05:03	02/28/22 05:05	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		02/16/22 05:03	02/28/22 05:05	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		02/16/22 05:03	02/28/22 05:05	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		02/16/22 05:03	02/28/22 05:05	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/16/22 05:03	02/28/22 05:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		02/16/22 05:03	02/28/22 05:05	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		02/16/22 05:03	02/28/22 05:05	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		02/16/22 05:03	02/28/22 05:05	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		02/16/22 05:03	02/28/22 05:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		02/16/22 05:03	02/28/22 05:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		02/16/22 05:03	02/28/22 05:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		02/16/22 05:03	02/28/22 05:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		02/16/22 05:03	02/28/22 05:05	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		02/16/22 05:03	02/28/22 05:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		02/16/22 05:03	02/28/22 05:05	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		50 - 150	02/16/22 05:03	02/28/22 05:05	
13C4 PFHpA	100		50 - 150	02/16/22 05:03	02/28/22 05:05	
13C4 PFOA	96		50 - 150	02/16/22 05:03	02/28/22 05:05	
13C5 PFNA	94		50 - 150	02/16/22 05:03	02/28/22 05:05	
13C2 PFDA	88		50 - 150	02/16/22 05:03	02/28/22 05:05	
13C2 PFUnA	89		50 - 150	02/16/22 05:03	02/28/22 05:05	
13C2 PFDoA	92		50 - 150	02/16/22 05:03	02/28/22 05:05	
13C2 PFTeDA	94		50 - 150	02/16/22 05:03	02/28/22 05:05	
13C3 PFBS	97		50 - 150	02/16/22 05:03	02/28/22 05:05	
18O2 PFHxS	102		50 - 150	02/16/22 05:03	02/28/22 05:05	
13C4 PFOS	100		50 - 150	02/16/22 05:03	02/28/22 05:05	
d3-NMeFOSAA	89		50 - 150	02/16/22 05:03	02/28/22 05:05	
d5-NEtFOSAA	91		50 - 150	02/16/22 05:03	02/28/22 05:05	
13C3 HFPO-DA	84		50 - 150	02/16/22 05:03	02/28/22 05:05	

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: Gustavus Residential

Job ID: 320-84759-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDaA (50-150)	PFTDA (50-150)
320-84759-1	PW-039	105	110	106	103	101	106	100	88
320-84759-2	PW-203	88	101	99	94	93	88	84	84
320-84759-3	PW-2001	103	104	102	96	89	88	85	85
320-84759-4	PW-501	100	112	106	98	97	91	96	89
320-84759-5	PW-211	95	102	104	99	88	84	85	86
320-84759-6	PW-401	84	88	92	87	85	81	78	67
320-84759-7	PW-221	98	97	99	91	84	83	83	71
320-84759-8	NPS Well	100	99	101	95	92	84	84	81
320-84759-9	PW-010	94	100	98	90	87	86	92	86
320-84759-10	PW-112	96	106	102	93	91	92	92	86
320-84759-11	PW-012	99	110	102	97	96	96	91	80
320-84759-12	PW-205.1	93	107	95	94	87	88	94	94
320-84759-13	PW-040	88	93	98	90	86	87	89	85
320-84759-14	PW-037	85	87	87	82	76	81	81	80
320-84759-15	PW-038	94	100	96	94	88	89	92	94
LCS 320-566059/2-A	Lab Control Sample	97	105	101	106	96	93	98	90
LCSD 320-566059/3-A	Lab Control Sample Dup	97	97	99	91	90	91	90	89
MB 320-566059/1-A	Method Blank	104	103	106	92	95	96	100	91

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-84759-1	PW-039	109	109	104	88	97	101
320-84759-2	PW-203	96	96	93	86	86	92
320-84759-3	PW-2001	99	102	97	92	93	93
320-84759-4	PW-501	102	99	98	98	103	105
320-84759-5	PW-211	100	99	94	82	91	92
320-84759-6	PW-401	90	87	93	72	77	78
320-84759-7	PW-221	93	94	90	79	76	84
320-84759-8	NPS Well	106	99	93	83	89	94
320-84759-9	PW-010	93	92	95	91	95	87
320-84759-10	PW-112	105	103	97	86	89	90
320-84759-11	PW-012	102	107	101	93	90	93
320-84759-12	PW-205.1	95	97	95	82	90	80
320-84759-13	PW-040	95	96	94	88	90	86
320-84759-14	PW-037	85	85	89	80	84	77
320-84759-15	PW-038	97	102	100	89	91	84
LCS 320-566059/2-A	Lab Control Sample	105	100	99	96	102	95
LCSD 320-566059/3-A	Lab Control Sample Dup	111	95	101	85	91	91
MB 320-566059/1-A	Method Blank	102	104	97	91	101	95

#### Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus Residential

Job ID: 320-84759-1

PFHxS = 18O2 PFHxS  
PFOS = 13C4 PFOS  
d3NMFOS = d3-NMeFOSAA  
d5NEFOS = d5-NEtFOSAA  
HFPODA = 13C3 HFPO-DA

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# QC Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: Gustavus Residential

Job ID: 320-84759-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-566059/1-A**  
**Matrix: Water**  
**Analysis Batch: 568869**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 566059**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		02/16/22 05:03	02/28/22 01:53	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		02/16/22 05:03	02/28/22 01:53	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		02/16/22 05:03	02/28/22 01:53	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		02/16/22 05:03	02/28/22 01:53	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		02/16/22 05:03	02/28/22 01:53	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		02/16/22 05:03	02/28/22 01:53	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		02/16/22 05:03	02/28/22 01:53	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		02/16/22 05:03	02/28/22 01:53	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		02/16/22 05:03	02/28/22 01:53	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		02/16/22 05:03	02/28/22 01:53	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		02/16/22 05:03	02/28/22 01:53	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		02/16/22 05:03	02/28/22 01:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		02/16/22 05:03	02/28/22 01:53	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		02/16/22 05:03	02/28/22 01:53	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		02/16/22 05:03	02/28/22 01:53	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		02/16/22 05:03	02/28/22 01:53	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		02/16/22 05:03	02/28/22 01:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		02/16/22 05:03	02/28/22 01:53	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	104		50 - 150	02/16/22 05:03	02/28/22 01:53	1
13C4 PFHpA	103		50 - 150	02/16/22 05:03	02/28/22 01:53	1
13C4 PFOA	106		50 - 150	02/16/22 05:03	02/28/22 01:53	1
13C5 PFNA	92		50 - 150	02/16/22 05:03	02/28/22 01:53	1
13C2 PFDA	95		50 - 150	02/16/22 05:03	02/28/22 01:53	1
13C2 PFUnA	96		50 - 150	02/16/22 05:03	02/28/22 01:53	1
13C2 PFDoA	100		50 - 150	02/16/22 05:03	02/28/22 01:53	1
13C2 PFTeDA	91		50 - 150	02/16/22 05:03	02/28/22 01:53	1
13C3 PFBS	102		50 - 150	02/16/22 05:03	02/28/22 01:53	1
18O2 PFHxS	104		50 - 150	02/16/22 05:03	02/28/22 01:53	1
13C4 PFOS	97		50 - 150	02/16/22 05:03	02/28/22 01:53	1
d3-NMeFOSAA	91		50 - 150	02/16/22 05:03	02/28/22 01:53	1
d5-NEtFOSAA	101		50 - 150	02/16/22 05:03	02/28/22 01:53	1
13C3 HFPO-DA	95		50 - 150	02/16/22 05:03	02/28/22 01:53	1

**Lab Sample ID: LCS 320-566059/2-A**  
**Matrix: Water**  
**Analysis Batch: 568869**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 566059**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	40.0	42.1		ng/L		105	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	40.9		ng/L		102	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	36.1		ng/L		90	71 - 133
Perfluorononanoic acid (PFNA)	40.0	35.3		ng/L		88	69 - 130

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# QC Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: Gustavus Residential

Job ID: 320-84759-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-566059/2-A**  
**Matrix: Water**  
**Analysis Batch: 568869**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 566059**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	38.9		ng/L		97	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	41.1		ng/L		103	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	38.1		ng/L		95	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	40.3		ng/L		101	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	40.2		ng/L		101	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	32.0		ng/L		91	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	38.2		ng/L		105	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	36.7		ng/L		99	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	36.6		ng/L		91	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	33.5		ng/L		84	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	34.1		ng/L		91	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.0		ng/L		103	72 - 132
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	35.4		ng/L		94	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	41.3		ng/L		110	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	97		50 - 150
13C4 PFHpA	105		50 - 150
13C4 PFOA	101		50 - 150
13C5 PFNA	106		50 - 150
13C2 PFDA	96		50 - 150
13C2 PFUnA	93		50 - 150
13C2 PFDoA	98		50 - 150
13C2 PFTeDA	90		50 - 150
13C3 PFBS	105		50 - 150
18O2 PFHxS	100		50 - 150
13C4 PFOS	99		50 - 150
d3-NMeFOSAA	96		50 - 150
d5-NEtFOSAA	102		50 - 150
13C3 HFPO-DA	95		50 - 150

**Lab Sample ID: LCSD 320-566059/3-A**  
**Matrix: Water**  
**Analysis Batch: 568869**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 566059**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		RPD Limit
							Limits	RPD	
Perfluorohexanoic acid (PFHxA)	40.0	40.1		ng/L		100	72 - 129	5	30
Perfluoroheptanoic acid (PFHpA)	40.0	40.2		ng/L		101	72 - 130	2	30
Perfluorooctanoic acid (PFOA)	40.0	38.2		ng/L		95	71 - 133	6	30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: Gustavus Residential

Job ID: 320-84759-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-566059/3-A**  
**Matrix: Water**  
**Analysis Batch: 568869**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 566059**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	39.0		ng/L		97	69 - 130	10	30
Perfluorodecanoic acid (PFDA)	40.0	38.7		ng/L		97	71 - 129	0	30
Perfluoroundecanoic acid (PFUnA)	40.0	38.2		ng/L		96	69 - 133	7	30
Perfluorododecanoic acid (PFDoA)	40.0	39.8		ng/L		100	72 - 134	4	30
Perfluorotridecanoic acid (PFTriA)	40.0	41.3		ng/L		103	65 - 144	3	30
Perfluorotetradecanoic acid (PFTeA)	40.0	40.4		ng/L		101	71 - 132	0	30
Perfluorobutanesulfonic acid (PFBS)	35.4	28.6		ng/L		81	72 - 130	11	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	37.7		ng/L		104	68 - 131	1	30
Perfluorooctanesulfonic acid (PFOS)	37.1	31.6		ng/L		85	65 - 140	15	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	39.3		ng/L		98	65 - 136	7	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.6		ng/L		99	61 - 135	17	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	31.6		ng/L		85	77 - 137	8	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.1		ng/L		103	72 - 132	0	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	33.2		ng/L		88	76 - 136	6	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	38.3		ng/L		102	81 - 141	7	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	97		50 - 150
13C4 PFHpA	97		50 - 150
13C4 PFOA	99		50 - 150
13C5 PFNA	91		50 - 150
13C2 PFDA	90		50 - 150
13C2 PFUnA	91		50 - 150
13C2 PFDoA	90		50 - 150
13C2 PFTeDA	89		50 - 150
13C3 PFBS	111		50 - 150
18O2 PFHxS	95		50 - 150
13C4 PFOS	101		50 - 150
d3-NMeFOSAA	85		50 - 150
d5-NEtFOSAA	91		50 - 150
13C3 HFPO-DA	91		50 - 150



# QC Association Summary

Client: Shannon & Wilson, Inc  
 Project/Site: Gustavus Residential

Job ID: 320-84759-1

## LCMS

### Prep Batch: 566059

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-84759-1	PW-039	Total/NA	Water	3535	
320-84759-2	PW-203	Total/NA	Water	3535	
320-84759-3	PW-2001	Total/NA	Water	3535	
320-84759-4	PW-501	Total/NA	Water	3535	
320-84759-5	PW-211	Total/NA	Water	3535	
320-84759-6	PW-401	Total/NA	Water	3535	
320-84759-7	PW-221	Total/NA	Water	3535	
320-84759-8	NPS Well	Total/NA	Water	3535	
320-84759-9	PW-010	Total/NA	Water	3535	
320-84759-10	PW-112	Total/NA	Water	3535	
320-84759-11	PW-012	Total/NA	Water	3535	
320-84759-12	PW-205.1	Total/NA	Water	3535	
320-84759-13	PW-040	Total/NA	Water	3535	
320-84759-14	PW-037	Total/NA	Water	3535	
320-84759-15	PW-038	Total/NA	Water	3535	
MB 320-566059/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-566059/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-566059/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 568869

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-84759-1	PW-039	Total/NA	Water	EPA 537(Mod)	566059
320-84759-2	PW-203	Total/NA	Water	EPA 537(Mod)	566059
320-84759-3	PW-2001	Total/NA	Water	EPA 537(Mod)	566059
320-84759-5	PW-211	Total/NA	Water	EPA 537(Mod)	566059
320-84759-6	PW-401	Total/NA	Water	EPA 537(Mod)	566059
320-84759-7	PW-221	Total/NA	Water	EPA 537(Mod)	566059
320-84759-8	NPS Well	Total/NA	Water	EPA 537(Mod)	566059
320-84759-9	PW-010	Total/NA	Water	EPA 537(Mod)	566059
320-84759-10	PW-112	Total/NA	Water	EPA 537(Mod)	566059
320-84759-11	PW-012	Total/NA	Water	EPA 537(Mod)	566059
320-84759-12	PW-205.1	Total/NA	Water	EPA 537(Mod)	566059
320-84759-13	PW-040	Total/NA	Water	EPA 537(Mod)	566059
320-84759-14	PW-037	Total/NA	Water	EPA 537(Mod)	566059
320-84759-15	PW-038	Total/NA	Water	EPA 537(Mod)	566059
MB 320-566059/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	566059
LCS 320-566059/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	566059
LCSD 320-566059/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	566059

### Analysis Batch: 569519

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-84759-4	PW-501	Total/NA	Water	EPA 537(Mod)	566059

# Lab Chronicle

Client: Shannon & Wilson, Inc  
 Project/Site: Gustavus Residential

Job ID: 320-84759-1

**Client Sample ID: PW-039**

**Lab Sample ID: 320-84759-1**

**Date Collected: 02/09/22 09:37**

**Matrix: Water**

**Date Received: 02/12/22 10:54**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			273.9 mL	10.0 mL	566059	02/16/22 05:03	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568869	02/28/22 02:23	K1S	TAL SAC

**Client Sample ID: PW-203**

**Lab Sample ID: 320-84759-2**

**Date Collected: 02/07/22 13:15**

**Matrix: Water**

**Date Received: 02/12/22 10:54**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265.3 mL	10.0 mL	566059	02/16/22 05:03	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568869	02/28/22 02:33	K1S	TAL SAC

**Client Sample ID: PW-2001**

**Lab Sample ID: 320-84759-3**

**Date Collected: 02/08/22 09:59**

**Matrix: Water**

**Date Received: 02/12/22 10:54**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			257 mL	10.0 mL	566059	02/16/22 05:03	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568869	02/28/22 02:43	K1S	TAL SAC

**Client Sample ID: PW-501**

**Lab Sample ID: 320-84759-4**

**Date Collected: 02/07/22 14:58**

**Matrix: Water**

**Date Received: 02/12/22 10:54**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264.9 mL	10.0 mL	566059	02/16/22 05:03	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			569519	03/02/22 01:31	AF	TAL SAC

**Client Sample ID: PW-211**

**Lab Sample ID: 320-84759-5**

**Date Collected: 02/07/22 13:58**

**Matrix: Water**

**Date Received: 02/12/22 10:54**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			259.3 mL	10.0 mL	566059	02/16/22 05:03	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568869	02/28/22 03:04	K1S	TAL SAC

**Client Sample ID: PW-401**

**Lab Sample ID: 320-84759-6**

**Date Collected: 02/07/22 14:58**

**Matrix: Water**

**Date Received: 02/12/22 10:54**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264 mL	10.0 mL	566059	02/16/22 05:03	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568869	02/28/22 03:14	K1S	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
 Project/Site: Gustavus Residential

Job ID: 320-84759-1

**Client Sample ID: PW-221**

**Date Collected: 02/07/22 16:18**

**Date Received: 02/12/22 10:54**

**Lab Sample ID: 320-84759-7**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			250.4 mL	10.0 mL	566059	02/16/22 05:03	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568869	02/28/22 03:24	K1S	TAL SAC

**Client Sample ID: NPS Well**

**Date Collected: 02/08/22 10:09**

**Date Received: 02/12/22 10:54**

**Lab Sample ID: 320-84759-8**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			255.5 mL	10.0 mL	566059	02/16/22 05:03	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568869	02/28/22 03:54	K1S	TAL SAC

**Client Sample ID: PW-010**

**Date Collected: 02/08/22 09:06**

**Date Received: 02/12/22 10:54**

**Lab Sample ID: 320-84759-9**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			254 mL	10.0 mL	566059	02/16/22 05:03	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568869	02/28/22 04:04	K1S	TAL SAC

**Client Sample ID: PW-112**

**Date Collected: 02/09/22 12:15**

**Date Received: 02/12/22 10:54**

**Lab Sample ID: 320-84759-10**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265.7 mL	10.0 mL	566059	02/16/22 05:03	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568869	02/28/22 04:14	K1S	TAL SAC

**Client Sample ID: PW-012**

**Date Collected: 02/09/22 12:25**

**Date Received: 02/12/22 10:54**

**Lab Sample ID: 320-84759-11**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.1 mL	10.0 mL	566059	02/16/22 05:03	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568869	02/28/22 04:25	K1S	TAL SAC

**Client Sample ID: PW-205.1**

**Date Collected: 02/08/22 11:02**

**Date Received: 02/12/22 10:54**

**Lab Sample ID: 320-84759-12**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			263.2 mL	10.0 mL	566059	02/16/22 05:03	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568869	02/28/22 04:35	K1S	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
 Project/Site: Gustavus Residential

Job ID: 320-84759-1

**Client Sample ID: PW-040**  
**Date Collected: 02/09/22 09:12**  
**Date Received: 02/12/22 10:54**

**Lab Sample ID: 320-84759-13**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264 mL	10.0 mL	566059	02/16/22 05:03	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568869	02/28/22 04:45	K1S	TAL SAC

**Client Sample ID: PW-037**  
**Date Collected: 02/08/22 15:00**  
**Date Received: 02/12/22 10:54**

**Lab Sample ID: 320-84759-14**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			252.2 mL	10.0 mL	566059	02/16/22 05:03	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568869	02/28/22 04:55	K1S	TAL SAC

**Client Sample ID: PW-038**  
**Date Collected: 02/08/22 14:30**  
**Date Received: 02/12/22 10:54**

**Lab Sample ID: 320-84759-15**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.3 mL	10.0 mL	566059	02/16/22 05:03	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568869	02/28/22 05:05	K1S	TAL SAC

**Laboratory References:**

TAL SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus Residential

Job ID: 320-84759-1

## Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

1

2

3

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# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus Residential

Job ID: 320-84759-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	TAL SAC TAL SAC

**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus Residential

Job ID: 320-84759-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-84759-1	PW-039	Water	02/09/22 09:37	02/12/22 10:54
320-84759-2	PW-203	Water	02/07/22 13:15	02/12/22 10:54
320-84759-3	PW-2001	Water	02/08/22 09:59	02/12/22 10:54
320-84759-4	PW-501	Water	02/07/22 14:58	02/12/22 10:54
320-84759-5	PW-211	Water	02/07/22 13:58	02/12/22 10:54
320-84759-6	PW-401	Water	02/07/22 14:58	02/12/22 10:54
320-84759-7	PW-221	Water	02/07/22 16:18	02/12/22 10:54
320-84759-8	NPS Well	Water	02/08/22 10:09	02/12/22 10:54
320-84759-9	PW-010	Water	02/08/22 09:06	02/12/22 10:54
320-84759-10	PW-112	Water	02/09/22 12:15	02/12/22 10:54
320-84759-11	PW-012	Water	02/09/22 12:25	02/12/22 10:54
320-84759-12	PW-205.1	Water	02/08/22 11:02	02/12/22 10:54
320-84759-13	PW-040	Water	02/09/22 09:12	02/12/22 10:54
320-84759-14	PW-037	Water	02/08/22 15:00	02/12/22 10:54
320-84759-15	PW-038	Water	02/08/22 14:30	02/12/22 10:54

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# CHAIN-OF-CUSTODY RECORD

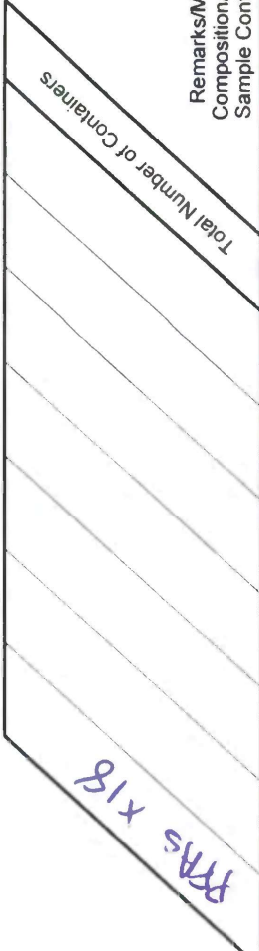
Analytical Methods (include preservative if used)

Quote No: \_\_\_\_\_

Turn Around Time:  Normal  Rush

J-Flags:  Yes  No

Please Specify \_\_\_\_\_



Remarks/Matrix Composition/Grab? Sample Containers

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PW-029		0937	2/9/22	X	2 Grand water as drinking water
PW-203		1315	2/7/22	X	
PW-2001		0959	2/8/22	X	
PW-S01		1458	2/7/22	X	
PW-211		1358	2/7/22	X	
PW-401		1458	2/7/22	X	
PW-221		1618	2/7/22	X	
NPS Well		1009	2/8/22	X	
PW-010		0906	2/8/22	X	
PW-112		1215	2/9/22	X	



Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Number: <u>102599-020</u>	Total No. of Containers: _____	Signature: _____	Signature: _____	Signature: _____
Name: <u>Gustavus Resident</u>	Seals/Intact? <u>Y/N/A</u> <u>Yes</u>	Time: <u>1600</u>	Time: _____	Time: _____
Contact: <u>KRF</u>	Received Good Cond./Cold _____	Date: <u>2/11/22</u>	Date: _____	Date: _____
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Temp: <u>1.0</u>	Printed Name: <u>A. Masters</u>	Printed Name: _____	Printed Name: _____
Sampler: <u>ARM</u>	Delivery Method: <u>GoldSpec</u>	Company: <u>Shannon + Wilson, Alexander's Inc.</u>	Company: _____	Company: _____
Notes: _____	Received By: 1. <u>[Signature]</u>	Received By: 2. _____	Received By: 3. _____	Received By: 3. _____
	Time: <u>1631</u>	Signature: _____	Signature: _____	Signature: _____
	Date: <u>2/11/22</u>	Printed Name: <u>[Signature]</u>	Printed Name: _____	Printed Name: _____
	Date: _____	Company: _____	Company: _____	Company: _____

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file







2355 Hill Road  
Fairbanks, AK 99709  
(907) 479-0600  
www.shannonwilson.com

# CHAIN-OF-CUSTODY RECORD

Laboratory GC-TRACE Page 2 of 2  
Attn: P. A. Hucker

Analytical Methods (include preservative if used)

Turn Around Time:  
 Normal  Rush  
 Please Specify

Quote No: \_\_\_\_\_

J-Flags:  Yes  No

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PW-012		1225	2/4/22	X	
PW-205.1		1102	2/8/22	X	
PW-040		0912	2/4/22	X	
PW-037		1500	2/8/22	X	
PW-038		1430	2/8/22	X	

**Project Information**

Number: 102599-020

Name: Georgius Residence

Contact: CAF

Ongoing Project? Yes  No

Sampler: AW

**Sample Receipt**

Total No. of Containers: \_\_\_\_\_

GC Seals/Intact: YNNA

Received Good Cond./Cold: Yes

Temp: 1.6

Delivery Method: Field/Struck

Relinquished By:	Relinquished By:	Relinquished By:
Signature:	Signature:	Signature:
Printed Name:	Printed Name:	Printed Name:
Company:	Company:	Company:
Time:	Time:	Time:
Date:	Date:	Date:
<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
<u>A. Masters</u>	<u>[Signature]</u>	<u>[Signature]</u>
<u>Shannon &amp; Wilson, Inc.</u>	<u>[Signature]</u>	<u>[Signature]</u>
	<u>[Signature]</u>	<u>[Signature]</u>
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	<u>[Signature]</u>	<u>[Signature]</u>

**Notes:**

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-84759-1

**Login Number: 84759**

**List Source: Eurofins Sacramento**

**List Number: 1**

**Creator: Her, David A**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1091842/1519406
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Laboratory Data Review Checklist

Completed By:

Amber Masters

Title:

Environmental Scientist

Date:

March 7, 2022

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-84759-1

Laboratory Report Date:

March 4, 2022

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

Laboratory Report Date:

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

Analyses were performed by the Eurofins Testing America Laboratory in West Sacramento, CA. The laboratory is approved by the DEC CS program and certified under the Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP) for the requested analyses.

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

Samples were preserved with Trizma®.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form notes that the samples were received in good condition.

Laboratory Report Date:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes  No  N/A  Comments:

- e. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

#### 4. Case Narrative

- a. Present and understandable?

Yes  No  N/A  Comments:

- b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

The case narrative indicates the following:

The laboratory applied an "I" qualifier to the PFOS results of sample *PW-211* to indicate the transition mass ratio was outside of established limits.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-566059.

The project samples were preserved with Trizma ®. The method blank and LCS/LCSD also contain Trizma ®.

- c. Were all corrective actions documented?

Yes  No  N/A  Comments:

N/A; see above.

- d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not note an effect on data quality or usability.  
See the following sections for our assessment.

Laboratory Report Date:

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

The reporting limit (RL) is less than the applicable DEC regulatory limit for the project.

e. Data quality or usability affected?

The data quality and/or usability was not affected; see above.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

There were no detections in the method blank sample associated with these project samples.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

Laboratory Report Date:

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A  Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

Laboratory Report Date:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

A MS/MSD was not analyzed with this work order; however, the laboratory analyzed LCS and LCSD samples to assess laboratory accuracy and precision.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; MS and MSD samples were not analyzed for this work order.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.



Laboratory Report Date:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes  No  N/A  Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A  Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

iv. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes  No  N/A  Comments:

PFAS are not volatile compounds. A trip blank is not required for the requested analysis.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

Laboratory Report Date:

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; a trip blank is not required for the requested analysis.

v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

ii. Submitted blind to lab?

Yes  No  N/A  Comments:Field duplicate pairs *NPS Well/PW-2001, PW-401/PW-501, and PW-012/PW-112* were submitted with this work order.iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration $R_2$  = Field Duplicate ConcentrationYes  No  N/A  Comments:

RPD are within project objectives, where calculable.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and/or usability was not affected; see above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

Reusable equipment was not used in the sampling procedure; therefore, an equipment blank is unnecessary.

i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

Laboratory Report Date:

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

iii. Data quality or usability affected?

Comments:

No; see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A  Comments:

The PFOS result for sample *PW-211* was affected by a transition mass ratio failure and quantitated manually. We consider these results estimated, biased high, and have applied the 'JH' qualifier.

## ANALYTICAL REPORT

Eurofins Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

Laboratory Job ID: 320-87434-1  
Client Project/Site: GUS Resid PFAS

For:  
Shannon & Wilson, Inc  
2355 Hill Rd.  
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger



---

Authorized for release by:  
5/18/2022 2:50:59 PM

David Alltucker, Project Manager I  
(916)374-4383  
[David.Alltucker@et.eurofinsus.com](mailto:David.Alltucker@et.eurofinsus.com)

### LINKS

Review your project  
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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

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**Job ID: 320-87434-1**

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**Laboratory: Eurofins Sacramento**

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**Narrative**

**Job Narrative  
320-87434-1**

**Receipt**

The samples were received on 5/3/2022 3:30 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.6° C.

**LCMS**

Method EPA 537(Mod): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: PW-012 (320-87434-6). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**Organic Prep**

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-586797.

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-586925.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

## Client Sample ID: PW-112

Lab Sample ID: 320-87434-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.62	J	1.7	0.47	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.6		1.7	0.45	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-040

Lab Sample ID: 320-87434-2

No Detections.

## Client Sample ID: PW-010

Lab Sample ID: 320-87434-3

No Detections.

## Client Sample ID: PW-038

Lab Sample ID: 320-87434-4

No Detections.

## Client Sample ID: PW-037

Lab Sample ID: 320-87434-5

No Detections.

## Client Sample ID: PW-012

Lab Sample ID: 320-87434-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.81	J	1.7	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.5		1.7	0.47	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-203

Lab Sample ID: 320-87434-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.20	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.58	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.65	J	1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: NPS Well

Lab Sample ID: 320-87434-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	5.6		1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.8		1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	3.8		1.8	0.78	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.29	J	1.8	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.37	J	1.8	0.28	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.3	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.6		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	9.3		1.8	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-039

Lab Sample ID: 320-87434-9

No Detections.

## Client Sample ID: PW-221

Lab Sample ID: 320-87434-10

No Detections.

## Client Sample ID: PW-401

Lab Sample ID: 320-87434-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.6		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.4	J	1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento



# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

## Client Sample ID: PW-401 (Continued)

Lab Sample ID: 320-87434-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.37	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.7		1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	18		1.9	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-211

Lab Sample ID: 320-87434-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.55	J	1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-059

Lab Sample ID: 320-87434-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.99	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.45	J	1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.2	J	1.9	0.79	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.39	J	1.9	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.52	J	1.9	0.29	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.6	J	1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.9		1.9	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-205.1

Lab Sample ID: 320-87434-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorodecanoic acid (PFDA)	0.32	J	1.9	0.29	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.26	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.3	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.1		1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-9001

Lab Sample ID: 320-87434-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	5.4		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.8		1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	3.4		1.9	0.79	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.33	J	1.9	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.30	J	1.9	0.29	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.1		1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	9.4		1.9	0.50	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

**Client Sample ID: PW-112**  
**Date Collected: 04/ 28/ 22 10:15**  
**Date Received: 05/ 03/ 22 1530**

**Lab Sample ID: 320-87434-1**  
**Matrix: Water**

**Method: EPA 537(Md) - PFAS for QSM5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.48	ng/L		05/11/22 12:08	05/13/22 22:58	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		05/11/22 12:08	05/13/22 22:58	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.71	ng/L		05/11/22 12:08	05/13/22 22:58	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.22	ng/L		05/11/22 12:08	05/13/22 22:58	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		05/11/22 12:08	05/13/22 22:58	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.92	ng/L		05/11/22 12:08	05/13/22 22:58	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46	ng/L		05/11/22 12:08	05/13/22 22:58	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		05/11/22 12:08	05/13/22 22:58	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.61	ng/L		05/11/22 12:08	05/13/22 22:58	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		05/11/22 12:08	05/13/22 22:58	1
<b>Per fluor ohexanesulfonic acid ( PFHxS)</b>	<b>0.62</b>	<b>J</b>	1.7	0.47	ng/L		05/11/22 12:08	05/13/22 22:58	1
<b>Per fluor octanesulfonic acid ( PFOS)</b>	<b>2.6</b>		1.7	0.45	ng/L		05/11/22 12:08	05/13/22 22:58	1
N-methylperfluorooctanesulfonamidooctic acid (NMeFOSAA)	ND		4.2	1.0	ng/L		05/11/22 12:08	05/13/22 22:58	1
N-ethylperfluorooctanesulfonamidooctic acid (NEtFOSAA)	ND		4.2	1.1	ng/L		05/11/22 12:08	05/13/22 22:58	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		05/11/22 12:08	05/13/22 22:58	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.3	1.2	ng/L		05/11/22 12:08	05/13/22 22:58	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		05/11/22 12:08	05/13/22 22:58	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.33	ng/L		05/11/22 12:08	05/13/22 22:58	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		50 - 150	05/11/22 12:08	05/13/22 22:58	1
13C4 PFHpA	93		50 - 150	05/11/22 12:08	05/13/22 22:58	1
13C4 PFOA	84		50 - 150	05/11/22 12:08	05/13/22 22:58	1
13C5 PFNA	85		50 - 150	05/11/22 12:08	05/13/22 22:58	1
13C2 PFDA	81		50 - 150	05/11/22 12:08	05/13/22 22:58	1
13C2 PFUnA	74		50 - 150	05/11/22 12:08	05/13/22 22:58	1
13C2 PFDoA	72		50 - 150	05/11/22 12:08	05/13/22 22:58	1
13C2 PFTeDA	68		50 - 150	05/11/22 12:08	05/13/22 22:58	1
13C3 PFBS	89		50 - 150	05/11/22 12:08	05/13/22 22:58	1
18O2 PFHxS	89		50 - 150	05/11/22 12:08	05/13/22 22:58	1
13C4 PFOS	77		50 - 150	05/11/22 12:08	05/13/22 22:58	1
d3-NMeFOSAA	67		50 - 150	05/11/22 12:08	05/13/22 22:58	1
d5-NEtFOSAA	70		50 - 150	05/11/22 12:08	05/13/22 22:58	1
13C3 HFPO-DA	87		50 - 150	05/11/22 12:08	05/13/22 22:58	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

**Client Sample ID: PW-040**

**Lab Sample ID: 320-87434-2**

**Date Collected: 04/ 28/ 22 13:40**

**Matrix: Water**

**Date Received: 05/ 03/ 22 1530**

**Method: EPA 57(Md) - PFAS for QSM5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		05/11/22 12:08	05/13/22 23:08	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		05/11/22 12:08	05/13/22 23:08	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		05/11/22 12:08	05/13/22 23:08	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		05/11/22 12:08	05/13/22 23:08	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		05/11/22 12:08	05/13/22 23:08	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		05/11/22 12:08	05/13/22 23:08	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		05/11/22 12:08	05/13/22 23:08	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		05/11/22 12:08	05/13/22 23:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		05/11/22 12:08	05/13/22 23:08	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		05/11/22 12:08	05/13/22 23:08	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		05/11/22 12:08	05/13/22 23:08	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		05/11/22 12:08	05/13/22 23:08	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		05/11/22 12:08	05/13/22 23:08	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		05/11/22 12:08	05/13/22 23:08	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		05/11/22 12:08	05/13/22 23:08	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		05/11/22 12:08	05/13/22 23:08	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		05/11/22 12:08	05/13/22 23:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		05/11/22 12:08	05/13/22 23:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		50 - 150	05/11/22 12:08	05/13/22 23:08	1
13C4 PFHpA	88		50 - 150	05/11/22 12:08	05/13/22 23:08	1
13C4 PFOA	83		50 - 150	05/11/22 12:08	05/13/22 23:08	1
13C5 PFNA	81		50 - 150	05/11/22 12:08	05/13/22 23:08	1
13C2 PFDA	84		50 - 150	05/11/22 12:08	05/13/22 23:08	1
13C2 PFUnA	77		50 - 150	05/11/22 12:08	05/13/22 23:08	1
13C2 PFDoA	82		50 - 150	05/11/22 12:08	05/13/22 23:08	1
13C2 PFTeDA	76		50 - 150	05/11/22 12:08	05/13/22 23:08	1
13C3 PFBS	86		50 - 150	05/11/22 12:08	05/13/22 23:08	1
18O2 PFHxS	87		50 - 150	05/11/22 12:08	05/13/22 23:08	1
13C4 PFOS	80		50 - 150	05/11/22 12:08	05/13/22 23:08	1
d3-NMeFOSAA	79		50 - 150	05/11/22 12:08	05/13/22 23:08	1
d5-NEtFOSAA	80		50 - 150	05/11/22 12:08	05/13/22 23:08	1
13C3 HFPO-DA	82		50 - 150	05/11/22 12:08	05/13/22 23:08	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

**Client Sample ID: PW-010**

**Lab Sample ID: 320-87434-3**

**Date Collected: 04/ 27/ 22 11:32**

**Matrix: Water**

**Date Received: 05/ 03/ 22 1530**

**Method: EPA 57(Md) - PFAS for QSM5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		05/11/22 05:23	05/14/22 02:20	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		05/11/22 05:23	05/14/22 02:20	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		05/11/22 05:23	05/14/22 02:20	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		05/11/22 05:23	05/14/22 02:20	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		05/11/22 05:23	05/14/22 02:20	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		05/11/22 05:23	05/14/22 02:20	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		05/11/22 05:23	05/14/22 02:20	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		05/11/22 05:23	05/14/22 02:20	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		05/11/22 05:23	05/14/22 02:20	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		05/11/22 05:23	05/14/22 02:20	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.54	ng/L		05/11/22 05:23	05/14/22 02:20	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		05/11/22 05:23	05/14/22 02:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		05/11/22 05:23	05/14/22 02:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		05/11/22 05:23	05/14/22 02:20	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		05/11/22 05:23	05/14/22 02:20	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		05/11/22 05:23	05/14/22 02:20	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		05/11/22 05:23	05/14/22 02:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		05/11/22 05:23	05/14/22 02:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		50 - 150	05/11/22 05:23	05/14/22 02:20	1
13C4 PFHpA	94		50 - 150	05/11/22 05:23	05/14/22 02:20	1
13C4 PFOA	99		50 - 150	05/11/22 05:23	05/14/22 02:20	1
13C5 PFNA	94		50 - 150	05/11/22 05:23	05/14/22 02:20	1
13C2 PFDA	91		50 - 150	05/11/22 05:23	05/14/22 02:20	1
13C2 PFUnA	85		50 - 150	05/11/22 05:23	05/14/22 02:20	1
13C2 PFDoA	82		50 - 150	05/11/22 05:23	05/14/22 02:20	1
13C2 PFTeDA	80		50 - 150	05/11/22 05:23	05/14/22 02:20	1
13C3 PFBS	104		50 - 150	05/11/22 05:23	05/14/22 02:20	1
18O2 PFHxS	105		50 - 150	05/11/22 05:23	05/14/22 02:20	1
13C4 PFOS	91		50 - 150	05/11/22 05:23	05/14/22 02:20	1
d3-NMeFOSAA	78		50 - 150	05/11/22 05:23	05/14/22 02:20	1
d5-NEtFOSAA	79		50 - 150	05/11/22 05:23	05/14/22 02:20	1
13C3 HFPO-DA	91		50 - 150	05/11/22 05:23	05/14/22 02:20	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

**Client Sample ID: PW-038**

**Lab Sample ID: 320-87434-4**

**Date Collected: 04/ 28/ 22 13:18**

**Matrix: Water**

**Date Received: 05/ 03/ 22 1530**

**Method: EPA 57(Md) - PFAS for QSM5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.48	ng/L		05/11/22 12:08	05/13/22 23:18	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		05/11/22 12:08	05/13/22 23:18	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.71	ng/L		05/11/22 12:08	05/13/22 23:18	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.22	ng/L		05/11/22 12:08	05/13/22 23:18	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		05/11/22 12:08	05/13/22 23:18	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.92	ng/L		05/11/22 12:08	05/13/22 23:18	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46	ng/L		05/11/22 12:08	05/13/22 23:18	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		05/11/22 12:08	05/13/22 23:18	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.61	ng/L		05/11/22 12:08	05/13/22 23:18	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		05/11/22 12:08	05/13/22 23:18	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.47	ng/L		05/11/22 12:08	05/13/22 23:18	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.45	ng/L		05/11/22 12:08	05/13/22 23:18	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.2	1.0	ng/L		05/11/22 12:08	05/13/22 23:18	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.2	1.1	ng/L		05/11/22 12:08	05/13/22 23:18	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		05/11/22 12:08	05/13/22 23:18	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.3	1.2	ng/L		05/11/22 12:08	05/13/22 23:18	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		05/11/22 12:08	05/13/22 23:18	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.33	ng/L		05/11/22 12:08	05/13/22 23:18	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	78		50 - 150	05/11/22 12:08	05/13/22 23:18	1
13C4 PFHpA	73		50 - 150	05/11/22 12:08	05/13/22 23:18	1
13C4 PFOA	68		50 - 150	05/11/22 12:08	05/13/22 23:18	1
13C5 PFNA	68		50 - 150	05/11/22 12:08	05/13/22 23:18	1
13C2 PFDA	68		50 - 150	05/11/22 12:08	05/13/22 23:18	1
13C2 PFUnA	66		50 - 150	05/11/22 12:08	05/13/22 23:18	1
13C2 PFDoA	68		50 - 150	05/11/22 12:08	05/13/22 23:18	1
13C2 PFTeDA	63		50 - 150	05/11/22 12:08	05/13/22 23:18	1
13C3 PFBS	69		50 - 150	05/11/22 12:08	05/13/22 23:18	1
18O2 PFHxS	71		50 - 150	05/11/22 12:08	05/13/22 23:18	1
13C4 PFOS	65		50 - 150	05/11/22 12:08	05/13/22 23:18	1
d3-NMeFOSAA	63		50 - 150	05/11/22 12:08	05/13/22 23:18	1
d5-NEtFOSAA	71		50 - 150	05/11/22 12:08	05/13/22 23:18	1
13C3 HFPO-DA	72		50 - 150	05/11/22 12:08	05/13/22 23:18	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

**Client Sample ID: PW-037**  
**Date Collected: 04/ 28/ 22 12:34**  
**Date Received: 05/ 03/ 22 1530**

**Lab Sample ID: 320-87434-5**  
**Matrix: Water**

**Method: EPA 57(Md) - PFAS for QSM5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		05/11/22 12:08	05/13/22 23:28	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		05/11/22 12:08	05/13/22 23:28	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		05/11/22 12:08	05/13/22 23:28	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		05/11/22 12:08	05/13/22 23:28	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		05/11/22 12:08	05/13/22 23:28	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		05/11/22 12:08	05/13/22 23:28	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		05/11/22 12:08	05/13/22 23:28	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		05/11/22 12:08	05/13/22 23:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		05/11/22 12:08	05/13/22 23:28	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		05/11/22 12:08	05/13/22 23:28	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		05/11/22 12:08	05/13/22 23:28	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		05/11/22 12:08	05/13/22 23:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		05/11/22 12:08	05/13/22 23:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		05/11/22 12:08	05/13/22 23:28	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		05/11/22 12:08	05/13/22 23:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		05/11/22 12:08	05/13/22 23:28	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		05/11/22 12:08	05/13/22 23:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		05/11/22 12:08	05/13/22 23:28	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	81		50 - 150	05/11/22 12:08	05/13/22 23:28	1
13C4 PFHpA	81		50 - 150	05/11/22 12:08	05/13/22 23:28	1
13C4 PFOA	73		50 - 150	05/11/22 12:08	05/13/22 23:28	1
13C5 PFNA	74		50 - 150	05/11/22 12:08	05/13/22 23:28	1
13C2 PFDA	74		50 - 150	05/11/22 12:08	05/13/22 23:28	1
13C2 PFUnA	71		50 - 150	05/11/22 12:08	05/13/22 23:28	1
13C2 PFDoA	71		50 - 150	05/11/22 12:08	05/13/22 23:28	1
13C2 PFTeDA	63		50 - 150	05/11/22 12:08	05/13/22 23:28	1
13C3 PFBS	72		50 - 150	05/11/22 12:08	05/13/22 23:28	1
18O2 PFHxS	72		50 - 150	05/11/22 12:08	05/13/22 23:28	1
13C4 PFOS	64		50 - 150	05/11/22 12:08	05/13/22 23:28	1
d3-NMeFOSAA	69		50 - 150	05/11/22 12:08	05/13/22 23:28	1
d5-NEtFOSAA	74		50 - 150	05/11/22 12:08	05/13/22 23:28	1
13C3 HFPO-DA	75		50 - 150	05/11/22 12:08	05/13/22 23:28	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

**Client Sample ID: PW-012**

**Lab Sample ID: 320-87434-6**

**Date Collected: 04/ 28/ 22 10:25**

**Matrix: Water**

**Date Received: 05/ 03/ 22 1530**

**Method: EPA 537(Md) - PFAS for QSM5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.51	ng/L		05/11/22 12:08	05/13/22 23:39	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		05/11/22 12:08	05/13/22 23:39	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		05/11/22 12:08	05/13/22 23:39	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.24	ng/L		05/11/22 12:08	05/13/22 23:39	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		05/11/22 12:08	05/13/22 23:39	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		05/11/22 12:08	05/13/22 23:39	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		05/11/22 12:08	05/13/22 23:39	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		05/11/22 12:08	05/13/22 23:39	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.64	ng/L		05/11/22 12:08	05/13/22 23:39	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		05/11/22 12:08	05/13/22 23:39	1
<b>Per fluor ohexanesulfonic acid ( PFHxS)</b>	<b>0.81</b>	<b>J</b>	1.7	0.50	ng/L		05/11/22 12:08	05/13/22 23:39	1
<b>Per fluor octanesulfonic acid ( PFOS)</b>	<b>2.5</b>		1.7	0.47	ng/L		05/11/22 12:08	05/13/22 23:39	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.0	ng/L		05/11/22 12:08	05/13/22 23:39	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		05/11/22 12:08	05/13/22 23:39	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		05/11/22 12:08	05/13/22 23:39	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		05/11/22 12:08	05/13/22 23:39	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		05/11/22 12:08	05/13/22 23:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		05/11/22 12:08	05/13/22 23:39	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	71		50 - 150	05/11/22 12:08	05/13/22 23:39	1
13C4 PFHpA	65		50 - 150	05/11/22 12:08	05/13/22 23:39	1
13C4 PFOA	60		50 - 150	05/11/22 12:08	05/13/22 23:39	1
13C5 PFNA	57		50 - 150	05/11/22 12:08	05/13/22 23:39	1
13C2 PFDA	58		50 - 150	05/11/22 12:08	05/13/22 23:39	1
13C2 PFUnA	55		50 - 150	05/11/22 12:08	05/13/22 23:39	1
13C2 PFDoA	52		50 - 150	05/11/22 12:08	05/13/22 23:39	1
13C2 PFTeDA	51		50 - 150	05/11/22 12:08	05/13/22 23:39	1
13C3 PFBS	63		50 - 150	05/11/22 12:08	05/13/22 23:39	1
18O2 PFHxS	62		50 - 150	05/11/22 12:08	05/13/22 23:39	1
13C4 PFOS	56		50 - 150	05/11/22 12:08	05/13/22 23:39	1
d3-NMeFOSAA	49	*5-	50 - 150	05/11/22 12:08	05/13/22 23:39	1
d5-NEtFOSAA	52		50 - 150	05/11/22 12:08	05/13/22 23:39	1
13C3 HFPO-DA	60		50 - 150	05/11/22 12:08	05/13/22 23:39	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

**Client Sample ID: PW-203**

**Lab Sample ID: 320-87434-7**

**Date Collected: 04/ 27/ 22 07:45**

**Matrix: Water**

**Date Received: 05/ 03/ 22 1530**

**Method: EPA 537(Md) - PFAS for QSM5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		05/11/22 05:23	05/14/22 02:31	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		05/11/22 05:23	05/14/22 02:31	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		05/11/22 05:23	05/14/22 02:31	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		05/11/22 05:23	05/14/22 02:31	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		05/11/22 05:23	05/14/22 02:31	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		05/11/22 05:23	05/14/22 02:31	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		05/11/22 05:23	05/14/22 02:31	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		05/11/22 05:23	05/14/22 02:31	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		05/11/22 05:23	05/14/22 02:31	1
<b>Per fluor obutanesulfonic acid ( PFBS)</b>	<b>0.20</b>	<b>J</b>	1.9	0.19	ng/L		05/11/22 05:23	05/14/22 02:31	1
<b>Per fluor ohexanesulfonic acid ( PFHxS)</b>	<b>0.58</b>	<b>J</b>	1.9	0.54	ng/L		05/11/22 05:23	05/14/22 02:31	1
<b>Per fluor ooctanesulfonic acid ( PFOS)</b>	<b>0.65</b>	<b>J</b>	1.9	0.51	ng/L		05/11/22 05:23	05/14/22 02:31	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		05/11/22 05:23	05/14/22 02:31	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		05/11/22 05:23	05/14/22 02:31	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		05/11/22 05:23	05/14/22 02:31	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		05/11/22 05:23	05/14/22 02:31	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		05/11/22 05:23	05/14/22 02:31	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		05/11/22 05:23	05/14/22 02:31	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFHxA	91		50 - 150				05/11/22 05:23	05/14/22 02:31	1
13C4 PFHpA	94		50 - 150				05/11/22 05:23	05/14/22 02:31	1
13C4 PFOA	95		50 - 150				05/11/22 05:23	05/14/22 02:31	1
13C5 PFNA	96		50 - 150				05/11/22 05:23	05/14/22 02:31	1
13C2 PFDA	88		50 - 150				05/11/22 05:23	05/14/22 02:31	1
13C2 PFUnA	87		50 - 150				05/11/22 05:23	05/14/22 02:31	1
13C2 PFDoA	88		50 - 150				05/11/22 05:23	05/14/22 02:31	1
13C2 PFTeDA	88		50 - 150				05/11/22 05:23	05/14/22 02:31	1
13C3 PFBS	97		50 - 150				05/11/22 05:23	05/14/22 02:31	1
18O2 PFHxS	95		50 - 150				05/11/22 05:23	05/14/22 02:31	1
13C4 PFOS	83		50 - 150				05/11/22 05:23	05/14/22 02:31	1
d3-NMeFOSAA	92		50 - 150				05/11/22 05:23	05/14/22 02:31	1
d5-NEtFOSAA	86		50 - 150				05/11/22 05:23	05/14/22 02:31	1
13C3 HFPO-DA	87		50 - 150				05/11/22 05:23	05/14/22 02:31	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

**Client Sample ID: NPS Well**

**Lab Sample ID: 320-87434-8**

Date Collected: 04/ 27/ 22 10:15

**Matrix: Water**

Date Received: 05/ 03/ 22 1530

**Method: EPA 537(Md) - PFAS for QSM5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Per fluor ohexanoic acid (PFHxA)	56		1.8	0.53	ng/L		05/11/22 05:23	05/14/22 02:41	1
Per fluor oheptanoic acid (PFHpA)	2.8		1.8	0.23	ng/L		05/11/22 05:23	05/14/22 02:41	1
Per fluor octanoic acid (PFOA)	3.8		1.8	0.78	ng/L		05/11/22 05:23	05/14/22 02:41	1
Per fluor ononanoic acid (PFNA)	0.29	J	1.8	0.25	ng/L		05/11/22 05:23	05/14/22 02:41	1
Per fluor odecanoic acid (PFDA)	0.37	J	1.8	0.28	ng/L		05/11/22 05:23	05/14/22 02:41	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		05/11/22 05:23	05/14/22 02:41	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		05/11/22 05:23	05/14/22 02:41	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		05/11/22 05:23	05/14/22 02:41	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		05/11/22 05:23	05/14/22 02:41	1
Per fluor obutanesulfonic acid (PFBS)	1.3	J	1.8	0.18	ng/L		05/11/22 05:23	05/14/22 02:41	1
Per fluor ohexanesulfonic acid (PFHxS)	6.6		1.8	0.52	ng/L		05/11/22 05:23	05/14/22 02:41	1
Per fluor octanesulfonic acid (PFOS)	9.3		1.8	0.50	ng/L		05/11/22 05:23	05/14/22 02:41	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		05/11/22 05:23	05/14/22 02:41	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		05/11/22 05:23	05/14/22 02:41	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		05/11/22 05:23	05/14/22 02:41	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		05/11/22 05:23	05/14/22 02:41	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		05/11/22 05:23	05/14/22 02:41	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		05/11/22 05:23	05/14/22 02:41	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		50 - 150	05/11/22 05:23	05/14/22 02:41	1
13C4 PFHpA	93		50 - 150	05/11/22 05:23	05/14/22 02:41	1
13C4 PFOA	96		50 - 150	05/11/22 05:23	05/14/22 02:41	1
13C5 PFNA	91		50 - 150	05/11/22 05:23	05/14/22 02:41	1
13C2 PFDA	88		50 - 150	05/11/22 05:23	05/14/22 02:41	1
13C2 PFUnA	82		50 - 150	05/11/22 05:23	05/14/22 02:41	1
13C2 PFDoA	81		50 - 150	05/11/22 05:23	05/14/22 02:41	1
13C2 PFTeDA	83		50 - 150	05/11/22 05:23	05/14/22 02:41	1
13C3 PFBS	102		50 - 150	05/11/22 05:23	05/14/22 02:41	1
18O2 PFHxS	104		50 - 150	05/11/22 05:23	05/14/22 02:41	1
13C4 PFOS	89		50 - 150	05/11/22 05:23	05/14/22 02:41	1
d3-NMeFOSAA	78		50 - 150	05/11/22 05:23	05/14/22 02:41	1
d5-NEtFOSAA	74		50 - 150	05/11/22 05:23	05/14/22 02:41	1
13C3 HFPO-DA	89		50 - 150	05/11/22 05:23	05/14/22 02:41	1

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

**Client Sample ID: PW-039**  
**Date Collected: 04/ 27/ 22 16:29**  
**Date Received: 05/ 03/ 22 1530**

**Lab Sample ID: 320-87434-9**  
**Matrix: Water**

**Method: EPA 517(Md) - PFAS for QSM5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		05/11/22 05:23	05/14/22 02:51	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		05/11/22 05:23	05/14/22 02:51	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		05/11/22 05:23	05/14/22 02:51	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		05/11/22 05:23	05/14/22 02:51	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		05/11/22 05:23	05/14/22 02:51	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		05/11/22 05:23	05/14/22 02:51	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		05/11/22 05:23	05/14/22 02:51	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		05/11/22 05:23	05/14/22 02:51	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		05/11/22 05:23	05/14/22 02:51	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		05/11/22 05:23	05/14/22 02:51	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		05/11/22 05:23	05/14/22 02:51	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		05/11/22 05:23	05/14/22 02:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		05/11/22 05:23	05/14/22 02:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		05/11/22 05:23	05/14/22 02:51	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		05/11/22 05:23	05/14/22 02:51	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		05/11/22 05:23	05/14/22 02:51	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		05/11/22 05:23	05/14/22 02:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		05/11/22 05:23	05/14/22 02:51	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		50 - 150	05/11/22 05:23	05/14/22 02:51	1
13C4 PFHpA	95		50 - 150	05/11/22 05:23	05/14/22 02:51	1
13C4 PFOA	94		50 - 150	05/11/22 05:23	05/14/22 02:51	1
13C5 PFNA	91		50 - 150	05/11/22 05:23	05/14/22 02:51	1
13C2 PFDA	91		50 - 150	05/11/22 05:23	05/14/22 02:51	1
13C2 PFUnA	84		50 - 150	05/11/22 05:23	05/14/22 02:51	1
13C2 PFDoA	86		50 - 150	05/11/22 05:23	05/14/22 02:51	1
13C2 PFTeDA	85		50 - 150	05/11/22 05:23	05/14/22 02:51	1
13C3 PFBS	98		50 - 150	05/11/22 05:23	05/14/22 02:51	1
18O2 PFHxS	96		50 - 150	05/11/22 05:23	05/14/22 02:51	1
13C4 PFOS	86		50 - 150	05/11/22 05:23	05/14/22 02:51	1
d3-NMeFOSAA	84		50 - 150	05/11/22 05:23	05/14/22 02:51	1
d5-NEtFOSAA	82		50 - 150	05/11/22 05:23	05/14/22 02:51	1
13C3 HFPO-DA	91		50 - 150	05/11/22 05:23	05/14/22 02:51	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

**Client Sample ID: PW-221**  
**Date Collected: 04/ 27/ 22 11:05**  
**Date Received: 05/ 03/ 22 1530**

**Lab Sample ID: 320-87434-10**  
**Matrix: Water**

**Method: EPA 57(Md) - PFAS for QSM5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		05/11/22 05:23	05/14/22 03:02	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		05/11/22 05:23	05/14/22 03:02	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		05/11/22 05:23	05/14/22 03:02	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		05/11/22 05:23	05/14/22 03:02	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		05/11/22 05:23	05/14/22 03:02	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		05/11/22 05:23	05/14/22 03:02	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		05/11/22 05:23	05/14/22 03:02	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		05/11/22 05:23	05/14/22 03:02	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		05/11/22 05:23	05/14/22 03:02	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		05/11/22 05:23	05/14/22 03:02	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.54	ng/L		05/11/22 05:23	05/14/22 03:02	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		05/11/22 05:23	05/14/22 03:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		05/11/22 05:23	05/14/22 03:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		05/11/22 05:23	05/14/22 03:02	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		05/11/22 05:23	05/14/22 03:02	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		05/11/22 05:23	05/14/22 03:02	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		05/11/22 05:23	05/14/22 03:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		05/11/22 05:23	05/14/22 03:02	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		50 - 150	05/11/22 05:23	05/14/22 03:02	1
13C4 PFHpA	90		50 - 150	05/11/22 05:23	05/14/22 03:02	1
13C4 PFOA	89		50 - 150	05/11/22 05:23	05/14/22 03:02	1
13C5 PFNA	86		50 - 150	05/11/22 05:23	05/14/22 03:02	1
13C2 PFDA	82		50 - 150	05/11/22 05:23	05/14/22 03:02	1
13C2 PFUnA	74		50 - 150	05/11/22 05:23	05/14/22 03:02	1
13C2 PFDoA	74		50 - 150	05/11/22 05:23	05/14/22 03:02	1
13C2 PFTeDA	72		50 - 150	05/11/22 05:23	05/14/22 03:02	1
13C3 PFBS	92		50 - 150	05/11/22 05:23	05/14/22 03:02	1
18O2 PFHxS	90		50 - 150	05/11/22 05:23	05/14/22 03:02	1
13C4 PFOS	77		50 - 150	05/11/22 05:23	05/14/22 03:02	1
d3-NMeFOSAA	71		50 - 150	05/11/22 05:23	05/14/22 03:02	1
d5-NEtFOSAA	73		50 - 150	05/11/22 05:23	05/14/22 03:02	1
13C3 HFPO-DA	81		50 - 150	05/11/22 05:23	05/14/22 03:02	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

**Client Sample ID: PW-401**  
**Date Collected: 04/ 27/ 22 1552**  
**Date Received: 05/ 03/ 22 1530**

**Lab Sample ID: 320-87434-11**  
**Matrix: Water**

**Method: EPA 537(Md) - PFAS for QSM5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Per fluor ohexanoic acid (PFHxA)	2.6		1.9	0.54	ng/L		05/11/22 05:23	05/14/22 03:12	1
Per fluor oheptanoic acid (PFHpA)	1.4	J	1.9	0.23	ng/L		05/11/22 05:23	05/14/22 03:12	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		05/11/22 05:23	05/14/22 03:12	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		05/11/22 05:23	05/14/22 03:12	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		05/11/22 05:23	05/14/22 03:12	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		05/11/22 05:23	05/14/22 03:12	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		05/11/22 05:23	05/14/22 03:12	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		05/11/22 05:23	05/14/22 03:12	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		05/11/22 05:23	05/14/22 03:12	1
Per fluor obutanesulfonic acid (PFBS)	0.37	J	1.9	0.19	ng/L		05/11/22 05:23	05/14/22 03:12	1
Per fluor ohexanesulfonic acid (PFHxS)	3.7		1.9	0.53	ng/L		05/11/22 05:23	05/14/22 03:12	1
Per fluor ooctanesulfonic acid (PFOS)	18		1.9	0.50	ng/L		05/11/22 05:23	05/14/22 03:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		05/11/22 05:23	05/14/22 03:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		05/11/22 05:23	05/14/22 03:12	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		05/11/22 05:23	05/14/22 03:12	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		05/11/22 05:23	05/14/22 03:12	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		05/11/22 05:23	05/14/22 03:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		05/11/22 05:23	05/14/22 03:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	78		50 - 150	05/11/22 05:23	05/14/22 03:12	1
13C4 PFHpA	82		50 - 150	05/11/22 05:23	05/14/22 03:12	1
13C4 PFOA	82		50 - 150	05/11/22 05:23	05/14/22 03:12	1
13C5 PFNA	80		50 - 150	05/11/22 05:23	05/14/22 03:12	1
13C2 PFDA	74		50 - 150	05/11/22 05:23	05/14/22 03:12	1
13C2 PFUnA	73		50 - 150	05/11/22 05:23	05/14/22 03:12	1
13C2 PFDoA	67		50 - 150	05/11/22 05:23	05/14/22 03:12	1
13C2 PFTeDA	70		50 - 150	05/11/22 05:23	05/14/22 03:12	1
13C3 PFBS	91		50 - 150	05/11/22 05:23	05/14/22 03:12	1
18O2 PFHxS	84		50 - 150	05/11/22 05:23	05/14/22 03:12	1
13C4 PFOS	77		50 - 150	05/11/22 05:23	05/14/22 03:12	1
d3-NMeFOSAA	74		50 - 150	05/11/22 05:23	05/14/22 03:12	1
d5-NEtFOSAA	68		50 - 150	05/11/22 05:23	05/14/22 03:12	1
13C3 HFPO-DA	77		50 - 150	05/11/22 05:23	05/14/22 03:12	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

**Client Sample ID: PW-211**  
**Date Collected: 04/ 27/ 22 09 :05**  
**Date Received: 05/ 03/ 22 1530**

**Lab Sample ID: 320-87434-12**  
**Matrix: Water**

**Method: EPA 537(Md) - PFAS for QSM5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		05/11/22 05:23	05/14/22 03:23	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		05/11/22 05:23	05/14/22 03:23	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		05/11/22 05:23	05/14/22 03:23	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		05/11/22 05:23	05/14/22 03:23	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		05/11/22 05:23	05/14/22 03:23	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		05/11/22 05:23	05/14/22 03:23	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		05/11/22 05:23	05/14/22 03:23	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		05/11/22 05:23	05/14/22 03:23	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		05/11/22 05:23	05/14/22 03:23	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		05/11/22 05:23	05/14/22 03:23	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		05/11/22 05:23	05/14/22 03:23	1
<b>Per fluor octanesulfonic acid ( PFOS)</b>	<b>0.55</b>	<b>J</b>	1.8	0.49	ng/L		05/11/22 05:23	05/14/22 03:23	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		05/11/22 05:23	05/14/22 03:23	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		05/11/22 05:23	05/14/22 03:23	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		05/11/22 05:23	05/14/22 03:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		05/11/22 05:23	05/14/22 03:23	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		05/11/22 05:23	05/14/22 03:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		05/11/22 05:23	05/14/22 03:23	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		50 - 150	05/11/22 05:23	05/14/22 03:23	1
13C4 PFHpA	92		50 - 150	05/11/22 05:23	05/14/22 03:23	1
13C4 PFOA	95		50 - 150	05/11/22 05:23	05/14/22 03:23	1
13C5 PFNA	93		50 - 150	05/11/22 05:23	05/14/22 03:23	1
13C2 PFDA	89		50 - 150	05/11/22 05:23	05/14/22 03:23	1
13C2 PFUnA	88		50 - 150	05/11/22 05:23	05/14/22 03:23	1
13C2 PFDoA	89		50 - 150	05/11/22 05:23	05/14/22 03:23	1
13C2 PFTeDA	87		50 - 150	05/11/22 05:23	05/14/22 03:23	1
13C3 PFBS	100		50 - 150	05/11/22 05:23	05/14/22 03:23	1
18O2 PFHxS	94		50 - 150	05/11/22 05:23	05/14/22 03:23	1
13C4 PFOS	86		50 - 150	05/11/22 05:23	05/14/22 03:23	1
d3-NMeFOSAA	87		50 - 150	05/11/22 05:23	05/14/22 03:23	1
d5-NEtFOSAA	94		50 - 150	05/11/22 05:23	05/14/22 03:23	1
13C3 HFPO-DA	93		50 - 150	05/11/22 05:23	05/14/22 03:23	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

**Client Sample ID: PW-09**

**Lab Sample ID: 320-87434-13**

Date Collected: 04/ 27/ 22 08:28

**Matrix: Water**

Date Received: 05/ 03/ 22 1530

**Method: EPA 57(Md) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Per fluor ohexanoic acid (PFHxA)	0.99	J	1.9	0.54	ng/L		05/11/22 05:23	05/14/22 03:33	1
Per fluor oheptanoic acid (PFHpA)	0.45	J	1.9	0.23	ng/L		05/11/22 05:23	05/14/22 03:33	1
Per fluor octanoic acid (PFOA)	1.2	J	1.9	0.79	ng/L		05/11/22 05:23	05/14/22 03:33	1
Per fluor ononanoic acid ( PFNA)	0.39	J	1.9	0.25	ng/L		05/11/22 05:23	05/14/22 03:33	1
Per fluor odecanoic acid (PFDA)	0.52	J	1.9	0.29	ng/L		05/11/22 05:23	05/14/22 03:33	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		05/11/22 05:23	05/14/22 03:33	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		05/11/22 05:23	05/14/22 03:33	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		05/11/22 05:23	05/14/22 03:33	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		05/11/22 05:23	05/14/22 03:33	1
Per fluor obutanesulfonic acid ( PFBS)	1.2	J	1.9	0.19	ng/L		05/11/22 05:23	05/14/22 03:33	1
Per fluor ohexanesulfonic acid ( PFHxS)	1.6	J	1.9	0.53	ng/L		05/11/22 05:23	05/14/22 03:33	1
Per fluor octanesulfonic acid ( PFOS)	2.9		1.9	0.50	ng/L		05/11/22 05:23	05/14/22 03:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		05/11/22 05:23	05/14/22 03:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		05/11/22 05:23	05/14/22 03:33	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		05/11/22 05:23	05/14/22 03:33	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		05/11/22 05:23	05/14/22 03:33	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		05/11/22 05:23	05/14/22 03:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		05/11/22 05:23	05/14/22 03:33	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		50 - 150	05/11/22 05:23	05/14/22 03:33	1
13C4 PFHpA	97		50 - 150	05/11/22 05:23	05/14/22 03:33	1
13C4 PFOA	95		50 - 150	05/11/22 05:23	05/14/22 03:33	1
13C5 PFNA	88		50 - 150	05/11/22 05:23	05/14/22 03:33	1
13C2 PFDA	82		50 - 150	05/11/22 05:23	05/14/22 03:33	1
13C2 PFUnA	70		50 - 150	05/11/22 05:23	05/14/22 03:33	1
13C2 PFDoA	63		50 - 150	05/11/22 05:23	05/14/22 03:33	1
13C2 PFTeDA	66		50 - 150	05/11/22 05:23	05/14/22 03:33	1
13C3 PFBS	96		50 - 150	05/11/22 05:23	05/14/22 03:33	1
18O2 PFHxS	97		50 - 150	05/11/22 05:23	05/14/22 03:33	1
13C4 PFOS	84		50 - 150	05/11/22 05:23	05/14/22 03:33	1
d3-NMeFOSAA	69		50 - 150	05/11/22 05:23	05/14/22 03:33	1
d5-NEtFOSAA	66		50 - 150	05/11/22 05:23	05/14/22 03:33	1
13C3 HFPO-DA	93		50 - 150	05/11/22 05:23	05/14/22 03:33	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

**Client Sample ID: PW-2051**

**Lab Sample ID: 320-87434-14**

Date Collected: 04/ 27/ 22 09 :38

**Matrix: Water**

Date Received: 05/ 03/ 22 1530

**Method: EPA 57(Md) - PFAS for QSM5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		05/11/22 05:23	05/14/22 03:44	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		05/11/22 05:23	05/14/22 03:44	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		05/11/22 05:23	05/14/22 03:44	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		05/11/22 05:23	05/14/22 03:44	1
<b>Per fluor odecanoic acid (PFDA)</b>	<b>0.32</b>	<b>J</b>	1.9	0.29	ng/L		05/11/22 05:23	05/14/22 03:44	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		05/11/22 05:23	05/14/22 03:44	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		05/11/22 05:23	05/14/22 03:44	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		05/11/22 05:23	05/14/22 03:44	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		05/11/22 05:23	05/14/22 03:44	1
<b>Per fluor obutanesulfonic acid (PFBS)</b>	<b>0.26</b>	<b>J</b>	1.9	0.19	ng/L		05/11/22 05:23	05/14/22 03:44	1
<b>Per fluor ohexanesulfonic acid (PFHxS)</b>	<b>1.3</b>	<b>J</b>	1.9	0.54	ng/L		05/11/22 05:23	05/14/22 03:44	1
<b>Per fluor ooctanesulfonic acid (PFOS)</b>	<b>2.1</b>		1.9	0.51	ng/L		05/11/22 05:23	05/14/22 03:44	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		05/11/22 05:23	05/14/22 03:44	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		05/11/22 05:23	05/14/22 03:44	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		05/11/22 05:23	05/14/22 03:44	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		05/11/22 05:23	05/14/22 03:44	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		05/11/22 05:23	05/14/22 03:44	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		05/11/22 05:23	05/14/22 03:44	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		50 - 150	05/11/22 05:23	05/14/22 03:44	1
13C4 PFHpA	93		50 - 150	05/11/22 05:23	05/14/22 03:44	1
13C4 PFOA	93		50 - 150	05/11/22 05:23	05/14/22 03:44	1
13C5 PFNA	88		50 - 150	05/11/22 05:23	05/14/22 03:44	1
13C2 PFDA	87		50 - 150	05/11/22 05:23	05/14/22 03:44	1
13C2 PFUnA	84		50 - 150	05/11/22 05:23	05/14/22 03:44	1
13C2 PFDoA	83		50 - 150	05/11/22 05:23	05/14/22 03:44	1
13C2 PFTeDA	84		50 - 150	05/11/22 05:23	05/14/22 03:44	1
13C3 PFBS	95		50 - 150	05/11/22 05:23	05/14/22 03:44	1
18O2 PFHxS	93		50 - 150	05/11/22 05:23	05/14/22 03:44	1
13C4 PFOS	84		50 - 150	05/11/22 05:23	05/14/22 03:44	1
d3-NMeFOSAA	82		50 - 150	05/11/22 05:23	05/14/22 03:44	1
d5-NEtFOSAA	86		50 - 150	05/11/22 05:23	05/14/22 03:44	1
13C3 HFPO-DA	86		50 - 150	05/11/22 05:23	05/14/22 03:44	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

**Client Sample ID: PW-9001**

**Lab Sample ID: 320-87434-15**

Date Collected: 04/ 27/ 22 10:05

**Matrix: Water**

Date Received: 05/ 03/ 22 1530

**Method: EPA 537(Md) - PFAS for QSM5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Per fluor ohexanoic acid (PFHxA)	54		1.9	0.54	ng/L		05/11/22 05:23	05/14/22 04:15	1
Per fluor oheptanoic acid (PFHpA)	2.8		1.9	0.23	ng/L		05/11/22 05:23	05/14/22 04:15	1
Per fluor ooctanoic acid (PFOA)	3.4		1.9	0.79	ng/L		05/11/22 05:23	05/14/22 04:15	1
Per fluor ononanoic acid ( PFNA)	0.33	J	1.9	0.25	ng/L		05/11/22 05:23	05/14/22 04:15	1
Per fluor odecanoic acid (PFDA)	0.30	J	1.9	0.29	ng/L		05/11/22 05:23	05/14/22 04:15	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		05/11/22 05:23	05/14/22 04:15	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		05/11/22 05:23	05/14/22 04:15	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		05/11/22 05:23	05/14/22 04:15	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		05/11/22 05:23	05/14/22 04:15	1
Per fluor obutanesulfonic acid ( PFBS)	1.2	J	1.9	0.19	ng/L		05/11/22 05:23	05/14/22 04:15	1
Per fluor ohexanesulfonic acid ( PFHxS)	6.1		1.9	0.53	ng/L		05/11/22 05:23	05/14/22 04:15	1
Per fluor ooctanesulfonic acid ( PFOS)	9.4		1.9	0.50	ng/L		05/11/22 05:23	05/14/22 04:15	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		05/11/22 05:23	05/14/22 04:15	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		05/11/22 05:23	05/14/22 04:15	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		05/11/22 05:23	05/14/22 04:15	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		05/11/22 05:23	05/14/22 04:15	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		05/11/22 05:23	05/14/22 04:15	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		05/11/22 05:23	05/14/22 04:15	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		50 - 150	05/11/22 05:23	05/14/22 04:15	1
13C4 PFHpA	98		50 - 150	05/11/22 05:23	05/14/22 04:15	1
13C4 PFOA	98		50 - 150	05/11/22 05:23	05/14/22 04:15	1
13C5 PFNA	93		50 - 150	05/11/22 05:23	05/14/22 04:15	1
13C2 PFDA	90		50 - 150	05/11/22 05:23	05/14/22 04:15	1
13C2 PFUnA	84		50 - 150	05/11/22 05:23	05/14/22 04:15	1
13C2 PFDoA	83		50 - 150	05/11/22 05:23	05/14/22 04:15	1
13C2 PFTeDA	85		50 - 150	05/11/22 05:23	05/14/22 04:15	1
13C3 PFBS	99		50 - 150	05/11/22 05:23	05/14/22 04:15	1
18O2 PFHxS	102		50 - 150	05/11/22 05:23	05/14/22 04:15	1
13C4 PFOS	86		50 - 150	05/11/22 05:23	05/14/22 04:15	1
d3-NMeFOSAA	83		50 - 150	05/11/22 05:23	05/14/22 04:15	1
d5-NEtFOSAA	87		50 - 150	05/11/22 05:23	05/14/22 04:15	1
13C3 HFPO-DA	96		50 - 150	05/11/22 05:23	05/14/22 04:15	1



# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
320-87434-1	PW-112	91	93	84	85	81	74	72	68
320-87434-2	PW-040	95	88	83	81	84	77	82	76
320-87434-3	PW-010	88	94	99	94	91	85	82	80
320-87434-4	PW-038	78	73	68	68	68	66	68	63
320-87434-5	PW-037	81	81	73	74	74	71	71	63
320-87434-6	PW-012	71	65	60	57	58	55	52	51
320-87434-7	PW-203	91	94	95	96	88	87	88	88
320-87434-8	NPS Well	93	93	96	91	88	82	81	83
320-87434-9	PW-039	86	95	94	91	91	84	86	85
320-87434-10	PW-221	86	90	89	86	82	74	74	72
320-87434-11	PW-401	78	82	82	80	74	73	67	70
320-87434-12	PW-211	89	92	95	93	89	88	89	87
320-87434-13	PW-059	88	97	95	88	82	70	63	66
320-87434-14	PW-205.1	88	93	93	88	87	84	83	84
320-87434-15	PW-9001	93	98	98	93	90	84	83	85
LCS 320-586797/2-A	Lab Control Sample	92	95	93	90	92	85	89	83
LCS 320-586925/2-A	Lab Control Sample	93	89	85	84	85	80	77	75
LCSD 320-586797/3-A	Lab Control Sample Dup	81	82	83	79	83	79	78	78
LCSD 320-586925/3-A	Lab Control Sample Dup	96	89	87	89	84	79	83	78
MB 320-586797/1-A	Method Blank	92	94	94	92	91	91	88	85
MB 320-586925/1-A	Method Blank	92	86	81	83	87	79	76	72

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-87434-1	PW-112	89	89	77	67	70	87
320-87434-2	PW-040	86	87	80	79	80	82
320-87434-3	PW-010	104	105	91	78	79	91
320-87434-4	PW-038	69	71	65	63	71	72
320-87434-5	PW-037	72	72	64	69	74	75
320-87434-6	PW-012	63	62	56	49 *5-	52	60
320-87434-7	PW-203	97	95	83	92	86	87
320-87434-8	NPS Well	102	104	89	78	74	89
320-87434-9	PW-039	98	96	86	84	82	91
320-87434-10	PW-221	92	90	77	71	73	81
320-87434-11	PW-401	91	84	77	74	68	77
320-87434-12	PW-211	100	94	86	87	94	93
320-87434-13	PW-059	96	97	84	69	66	93
320-87434-14	PW-205.1	95	93	84	82	86	86
320-87434-15	PW-9001	99	102	86	83	87	96
LCS 320-586797/2-A	Lab Control Sample	96	95	88	85	85	89
LCS 320-586925/2-A	Lab Control Sample	83	83	77	75	74	91
LCSD 320-586797/3-A	Lab Control Sample Dup	85	85	74	79	77	79
LCSD 320-586925/3-A	Lab Control Sample Dup	89	90	80	78	81	100
MB 320-586797/1-A	Method Blank	101	97	90	86	91	99
MB 320-586925/1-A	Method Blank	79	82	74	74	80	88

**Surrogate Legend**

PFHxA = 13C2 PFHxA  
 C4PFHA = 13C4 PFHpA  
 PFOA = 13C4 PFOA

# Isotope Dilution Summary

Job ID: 320-87434-1

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

PFNA = 13C5 PFNA  
PFDA = 13C2 PFDA  
PFUnA = 13C2 PFUnA  
PFDoA = 13C2 PFDoA  
PFTDA = 13C2 PFTeDA  
C3PFBS = 13C3 PFBS  
PFHxS = 18O2 PFHxS  
PFOS = 13C4 PFOS  
d3NMFOS = d3-NMeFOSAA  
d5NEFOS = d5-NEtFOSAA  
HFPODA = 13C3 HFPO-DA

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-586797/1-A**  
**Matrix: Water**  
**Analysis Batch: 587703**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 586797**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		05/11/22 05:23	05/14/22 00:05	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		05/11/22 05:23	05/14/22 00:05	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		05/11/22 05:23	05/14/22 00:05	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		05/11/22 05:23	05/14/22 00:05	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		05/11/22 05:23	05/14/22 00:05	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		05/11/22 05:23	05/14/22 00:05	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		05/11/22 05:23	05/14/22 00:05	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		05/11/22 05:23	05/14/22 00:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		05/11/22 05:23	05/14/22 00:05	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		05/11/22 05:23	05/14/22 00:05	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		05/11/22 05:23	05/14/22 00:05	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		05/11/22 05:23	05/14/22 00:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		05/11/22 05:23	05/14/22 00:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		05/11/22 05:23	05/14/22 00:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		05/11/22 05:23	05/14/22 00:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		05/11/22 05:23	05/14/22 00:05	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		05/11/22 05:23	05/14/22 00:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		05/11/22 05:23	05/14/22 00:05	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		50 - 150	05/11/22 05:23	05/14/22 00:05	1
13C4 PFHpA	94		50 - 150	05/11/22 05:23	05/14/22 00:05	1
13C4 PFOA	94		50 - 150	05/11/22 05:23	05/14/22 00:05	1
13C5 PFNA	92		50 - 150	05/11/22 05:23	05/14/22 00:05	1
13C2 PFDA	91		50 - 150	05/11/22 05:23	05/14/22 00:05	1
13C2 PFUnA	91		50 - 150	05/11/22 05:23	05/14/22 00:05	1
13C2 PFDoA	88		50 - 150	05/11/22 05:23	05/14/22 00:05	1
13C2 PFTeDA	85		50 - 150	05/11/22 05:23	05/14/22 00:05	1
13C3 PFBS	101		50 - 150	05/11/22 05:23	05/14/22 00:05	1
18O2 PFHxS	97		50 - 150	05/11/22 05:23	05/14/22 00:05	1
13C4 PFOS	90		50 - 150	05/11/22 05:23	05/14/22 00:05	1
d3-NMeFOSAA	86		50 - 150	05/11/22 05:23	05/14/22 00:05	1
d5-NEtFOSAA	91		50 - 150	05/11/22 05:23	05/14/22 00:05	1
13C3 HFPO-DA	99		50 - 150	05/11/22 05:23	05/14/22 00:05	1

**Lab Sample ID: LCS 320-586797/2-A**  
**Matrix: Water**  
**Analysis Batch: 587703**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 586797**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	40.0	40.9		ng/L		102	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	40.7		ng/L		102	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	40.5		ng/L		101	71 - 133
Perfluorononanoic acid (PFNA)	40.0	40.4		ng/L		101	69 - 130

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-586797/2-A**  
**Matrix: Water**  
**Analysis Batch: 587703**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 586797**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	39.5		ng/L		99	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	41.5		ng/L		104	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	38.6		ng/L		97	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	38.8		ng/L		97	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	39.7		ng/L		99	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	35.9		ng/L		101	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.3		ng/L		89	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	36.6		ng/L		99	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.2		ng/L		100	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	37.6		ng/L		94	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	37.5		ng/L		101	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	38.8		ng/L		97	72 - 132
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	39.7		ng/L		105	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	41.6		ng/L		110	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	92		50 - 150
13C4 PFHpA	95		50 - 150
13C4 PFOA	93		50 - 150
13C5 PFNA	90		50 - 150
13C2 PFDA	92		50 - 150
13C2 PFUnA	85		50 - 150
13C2 PFDoA	89		50 - 150
13C2 PFTeDA	83		50 - 150
13C3 PFBS	96		50 - 150
18O2 PFHxS	95		50 - 150
13C4 PFOS	88		50 - 150
d3-NMeFOSAA	85		50 - 150
d5-NEtFOSAA	85		50 - 150
13C3 HFPO-DA	89		50 - 150

**Lab Sample ID: LCSD 320-586797/3-A**  
**Matrix: Water**  
**Analysis Batch: 587703**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 586797**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD Limit
							Limits	RPD	
Perfluorohexanoic acid (PFHxA)	40.0	42.4		ng/L		106	72 - 129	4	30
Perfluoroheptanoic acid (PFHpA)	40.0	40.2		ng/L		100	72 - 130	1	30
Perfluorooctanoic acid (PFOA)	40.0	39.4		ng/L		98	71 - 133	3	30

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-586797/3-A**  
**Matrix: Water**  
**Analysis Batch: 587703**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 586797**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	42.7		ng/L		107	69 - 130	5	30
Perfluorodecanoic acid (PFDA)	40.0	38.4		ng/L		96	71 - 129	3	30
Perfluoroundecanoic acid (PFUnA)	40.0	41.2		ng/L		103	69 - 133	1	30
Perfluorododecanoic acid (PFDoA)	40.0	38.8		ng/L		97	72 - 134	1	30
Perfluorotridecanoic acid (PFTriA)	40.0	40.2		ng/L		101	65 - 144	4	30
Perfluorotetradecanoic acid (PFTeA)	40.0	37.0		ng/L		92	71 - 132	7	30
Perfluorobutanesulfonic acid (PFBS)	35.4	35.0		ng/L		99	72 - 130	3	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.4		ng/L		92	68 - 131	4	30
Perfluorooctanesulfonic acid (PFOS)	37.1	38.8		ng/L		104	65 - 140	6	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	38.2		ng/L		96	65 - 136	5	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	38.9		ng/L		97	61 - 135	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	40.2		ng/L		108	77 - 137	7	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.8		ng/L		99	72 - 132	3	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	42.2		ng/L		112	76 - 136	6	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	44.4		ng/L		118	81 - 141	6	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	81		50 - 150
13C4 PFHpA	82		50 - 150
13C4 PFOA	83		50 - 150
13C5 PFNA	79		50 - 150
13C2 PFDA	83		50 - 150
13C2 PFUnA	79		50 - 150
13C2 PFDoA	78		50 - 150
13C2 PFTeDA	78		50 - 150
13C3 PFBS	85		50 - 150
18O2 PFHxS	85		50 - 150
13C4 PFOS	74		50 - 150
d3-NMeFOSAA	79		50 - 150
d5-NEtFOSAA	77		50 - 150
13C3 HFPO-DA	79		50 - 150

**Lab Sample ID: MB 320-586925/1-A**  
**Matrix: Water**  
**Analysis Batch: 587641**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 586925**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		05/11/22 12:08	05/13/22 20:56	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		05/11/22 12:08	05/13/22 20:56	1

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: MB 320-586925/1-A**  
**Matrix: Water**  
**Analysis Batch: 587641**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 586925**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		05/11/22 12:08	05/13/22 20:56	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		05/11/22 12:08	05/13/22 20:56	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		05/11/22 12:08	05/13/22 20:56	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		05/11/22 12:08	05/13/22 20:56	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		05/11/22 12:08	05/13/22 20:56	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		05/11/22 12:08	05/13/22 20:56	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		05/11/22 12:08	05/13/22 20:56	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		05/11/22 12:08	05/13/22 20:56	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		05/11/22 12:08	05/13/22 20:56	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		05/11/22 12:08	05/13/22 20:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		05/11/22 12:08	05/13/22 20:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		05/11/22 12:08	05/13/22 20:56	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		05/11/22 12:08	05/13/22 20:56	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		05/11/22 12:08	05/13/22 20:56	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		05/11/22 12:08	05/13/22 20:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		05/11/22 12:08	05/13/22 20:56	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	92		50 - 150	05/11/22 12:08	05/13/22 20:56	1
13C4 PFHpA	86		50 - 150	05/11/22 12:08	05/13/22 20:56	1
13C4 PFOA	81		50 - 150	05/11/22 12:08	05/13/22 20:56	1
13C5 PFNA	83		50 - 150	05/11/22 12:08	05/13/22 20:56	1
13C2 PFDA	87		50 - 150	05/11/22 12:08	05/13/22 20:56	1
13C2 PFUnA	79		50 - 150	05/11/22 12:08	05/13/22 20:56	1
13C2 PFDoA	76		50 - 150	05/11/22 12:08	05/13/22 20:56	1
13C2 PFTeDA	72		50 - 150	05/11/22 12:08	05/13/22 20:56	1
13C3 PFBS	79		50 - 150	05/11/22 12:08	05/13/22 20:56	1
18O2 PFHxS	82		50 - 150	05/11/22 12:08	05/13/22 20:56	1
13C4 PFOS	74		50 - 150	05/11/22 12:08	05/13/22 20:56	1
d3-NMeFOSAA	74		50 - 150	05/11/22 12:08	05/13/22 20:56	1
d5-NEtFOSAA	80		50 - 150	05/11/22 12:08	05/13/22 20:56	1
13C3 HFPO-DA	88		50 - 150	05/11/22 12:08	05/13/22 20:56	1

**Lab Sample ID: LCS 320-586925/2-A**  
**Matrix: Water**  
**Analysis Batch: 587641**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 586925**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec
							Limits
Perfluorohexanoic acid (PFHxA)	40.0	36.3		ng/L		91	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	41.2		ng/L		103	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	41.2		ng/L		103	71 - 133
Perfluorononanoic acid (PFNA)	40.0	42.0		ng/L		105	69 - 130
Perfluorodecanoic acid (PFDA)	40.0	40.3		ng/L		101	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	42.1		ng/L		105	69 - 133

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-586925/2-A**  
**Matrix: Water**  
**Analysis Batch: 587641**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 586925**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorododecanoic acid (PFDoA)	40.0	42.4		ng/L		106	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	35.9		ng/L		90	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	41.9		ng/L		105	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	34.1		ng/L		96	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.2		ng/L		89	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	37.2		ng/L		100	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	43.4		ng/L		108	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	36.5		ng/L		91	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	36.0		ng/L		97	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.2		ng/L		105	72 - 132
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	35.6		ng/L		95	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	42.7		ng/L		113	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	93		50 - 150
13C4 PFHpA	89		50 - 150
13C4 PFOA	85		50 - 150
13C5 PFNA	84		50 - 150
13C2 PFDA	85		50 - 150
13C2 PFUnA	80		50 - 150
13C2 PFDoA	77		50 - 150
13C2 PFTeDA	75		50 - 150
13C3 PFBS	83		50 - 150
18O2 PFHxS	83		50 - 150
13C4 PFOS	77		50 - 150
d3-NMeFOSAA	75		50 - 150
d5-NEtFOSAA	74		50 - 150
13C3 HFPO-DA	91		50 - 150

**Lab Sample ID: LCSD 320-586925/3-A**  
**Matrix: Water**  
**Analysis Batch: 587641**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 586925**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD
							Limits	RPD	Limit
Perfluorohexanoic acid (PFHxA)	40.0	36.7		ng/L		92	72 - 129	1	30
Perfluoroheptanoic acid (PFHpA)	40.0	42.0		ng/L		105	72 - 130	2	30
Perfluorooctanoic acid (PFOA)	40.0	39.8		ng/L		99	71 - 133	4	30
Perfluorononanoic acid (PFNA)	40.0	40.5		ng/L		101	69 - 130	4	30
Perfluorodecanoic acid (PFDA)	40.0	41.5		ng/L		104	71 - 129	3	30

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# QC Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-586925/3-A**  
**Matrix: Water**  
**Analysis Batch: 587641**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 586925**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)	40.0	42.2		ng/L		105	69 - 133	0	30
Perfluorododecanoic acid (PFDoA)	40.0	39.2		ng/L		98	72 - 134	8	30
Perfluorotridecanoic acid (PFTriA)	40.0	34.9		ng/L		87	65 - 144	3	30
Perfluorotetradecanoic acid (PFTeA)	40.0	39.2		ng/L		98	71 - 132	7	30
Perfluorobutanesulfonic acid (PFBS)	35.4	34.6		ng/L		98	72 - 130	2	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	31.8		ng/L		87	68 - 131	1	30
Perfluorooctanesulfonic acid (PFOS)	37.1	38.3		ng/L		103	65 - 140	3	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	43.3		ng/L		108	65 - 136	0	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	36.9		ng/L		92	61 - 135	1	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	37.9		ng/L		102	77 - 137	5	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	36.9		ng/L		92	72 - 132	13	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	36.6		ng/L		97	76 - 136	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	43.0		ng/L		114	81 - 141	1	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	96		50 - 150
13C4 PFHpA	89		50 - 150
13C4 PFOA	87		50 - 150
13C5 PFNA	89		50 - 150
13C2 PFDA	84		50 - 150
13C2 PFUnA	79		50 - 150
13C2 PFDoA	83		50 - 150
13C2 PFTeDA	78		50 - 150
13C3 PFBS	89		50 - 150
18O2 PFHxS	90		50 - 150
13C4 PFOS	80		50 - 150
d3-NMeFOSAA	78		50 - 150
d5-NEtFOSAA	81		50 - 150
13C3 HFPO-DA	100		50 - 150



# QC Association Summary

Client: Shannon & Wilson, Inc  
 Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

## LCMS

### Prep Batch: 586797

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-87434-3	PW-010	Total/NA	Water	3535	
320-87434-7	PW-203	Total/NA	Water	3535	
320-87434-8	NPS Well	Total/NA	Water	3535	
320-87434-9	PW-039	Total/NA	Water	3535	
320-87434-10	PW-221	Total/NA	Water	3535	
320-87434-11	PW-401	Total/NA	Water	3535	
320-87434-12	PW-211	Total/NA	Water	3535	
320-87434-13	PW-059	Total/NA	Water	3535	
320-87434-14	PW-205.1	Total/NA	Water	3535	
320-87434-15	PW-9001	Total/NA	Water	3535	
MB 320-586797/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-586797/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-586797/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Prep Batch: 586925

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-87434-1	PW-112	Total/NA	Water	3535	
320-87434-2	PW-040	Total/NA	Water	3535	
320-87434-4	PW-038	Total/NA	Water	3535	
320-87434-5	PW-037	Total/NA	Water	3535	
320-87434-6	PW-012	Total/NA	Water	3535	
MB 320-586925/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-586925/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-586925/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 587641

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-87434-1	PW-112	Total/NA	Water	EPA 537(Mod)	586925
320-87434-2	PW-040	Total/NA	Water	EPA 537(Mod)	586925
320-87434-4	PW-038	Total/NA	Water	EPA 537(Mod)	586925
320-87434-5	PW-037	Total/NA	Water	EPA 537(Mod)	586925
320-87434-6	PW-012	Total/NA	Water	EPA 537(Mod)	586925
MB 320-586925/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	586925
LCS 320-586925/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	586925
LCSD 320-586925/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	586925

### Analysis Batch: 587703

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-87434-3	PW-010	Total/NA	Water	EPA 537(Mod)	586797
320-87434-7	PW-203	Total/NA	Water	EPA 537(Mod)	586797
320-87434-8	NPS Well	Total/NA	Water	EPA 537(Mod)	586797
320-87434-9	PW-039	Total/NA	Water	EPA 537(Mod)	586797
320-87434-10	PW-221	Total/NA	Water	EPA 537(Mod)	586797
320-87434-11	PW-401	Total/NA	Water	EPA 537(Mod)	586797
320-87434-12	PW-211	Total/NA	Water	EPA 537(Mod)	586797
320-87434-13	PW-059	Total/NA	Water	EPA 537(Mod)	586797
320-87434-14	PW-205.1	Total/NA	Water	EPA 537(Mod)	586797
320-87434-15	PW-9001	Total/NA	Water	EPA 537(Mod)	586797
MB 320-586797/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	586797
LCS 320-586797/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	586797
LCSD 320-586797/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	586797

Eurofins Sacramento

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

## Client Sample ID: PW-112

Date Collected : 04/ 28/ 22 10:15

Date Received : 05/ 03/ 22 15:30

## Lab Sample ID: 320-87434-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			300.2 mL	10.0 mL	586925	05/11/22 12:08	RAC	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587641	05/13/22 22:58	K1S	TAL SAC

## Client Sample ID: PW-040

Date Collected : 04/ 28/ 22 13:40

Date Received : 05/ 03/ 22 15:30

## Lab Sample ID: 320-87434-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.3 mL	10.0 mL	586925	05/11/22 12:08	RAC	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587641	05/13/22 23:08	K1S	TAL SAC

## Client Sample ID: PW-010

Date Collected : 04/ 27/ 22 11:32

Date Received : 05/ 03/ 22 15:30

## Lab Sample ID: 320-87434-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			263.3 mL	10.0 mL	586797	05/11/22 05:23	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587703	05/14/22 02:20	RS1	TAL SAC

## Client Sample ID: PW-038

Date Collected : 04/ 28/ 22 13:18

Date Received : 05/ 03/ 22 15:30

## Lab Sample ID: 320-87434-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			300.1 mL	10.0 mL	586925	05/11/22 12:08	RAC	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587641	05/13/22 23:18	K1S	TAL SAC

## Client Sample ID: PW-037

Date Collected : 04/ 28/ 22 12:34

Date Received : 05/ 03/ 22 15:30

## Lab Sample ID: 320-87434-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			279.3 mL	10.0 mL	586925	05/11/22 12:08	RAC	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587641	05/13/22 23:28	K1S	TAL SAC

## Client Sample ID: PW-012

Date Collected : 04/ 28/ 22 10:25

Date Received : 05/ 03/ 22 15:30

## Lab Sample ID: 320-87434-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			286.4 mL	10.0 mL	586925	05/11/22 12:08	RAC	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587641	05/13/22 23:39	K1S	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

## Client Sample ID: PW-203

Date Collected : 04/ 27/ 22 07:45

Date Received : 05/ 03/ 22 15:30

## Lab Sample ID: 320-87434-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265.9 mL	10.0 mL	586797	05/11/22 05:23	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587703	05/14/22 02:31	RS1	TAL SAC

## Client Sample ID: NPS Well

Date Collected : 04/ 27/ 22 10:15

Date Received : 05/ 03/ 22 15:30

## Lab Sample ID: 320-87434-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			272.1 mL	10.0 mL	586797	05/11/22 05:23	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587703	05/14/22 02:41	RS1	TAL SAC

## Client Sample ID: PW-039

Date Collected : 04/ 27/ 22 16:29

Date Received : 05/ 03/ 22 15:30

## Lab Sample ID: 320-87434-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.6 mL	10.0 mL	586797	05/11/22 05:23	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587703	05/14/22 02:51	RS1	TAL SAC

## Client Sample ID: PW-221

Date Collected : 04/ 27/ 22 11:05

Date Received : 05/ 03/ 22 15:30

## Lab Sample ID: 320-87434-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264.6 mL	10.0 mL	586797	05/11/22 05:23	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587703	05/14/22 03:02	RS1	TAL SAC

## Client Sample ID: PW-401

Date Collected : 04/ 27/ 22 15:52

Date Received : 05/ 03/ 22 15:30

## Lab Sample ID: 320-87434-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.7 mL	10.0 mL	586797	05/11/22 05:23	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587703	05/14/22 03:12	RS1	TAL SAC

## Client Sample ID: PW-211

Date Collected : 04/ 27/ 22 09:05

Date Received : 05/ 03/ 22 15:30

## Lab Sample ID: 320-87434-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			273.1 mL	10.0 mL	586797	05/11/22 05:23	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587703	05/14/22 03:23	RS1	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
 Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

**Client Sample ID: PW-059**  
**Date Collected : 04/ 27/ 22 08:28**  
**Date Received : 05/ 03/ 22 15:30**

**Lab Sample ID: 320-87434-13**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Rin	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analys t	Lab
Total/NA	Prep	3535			267.6 mL	10.0 mL	586797	05/11/22 05:23	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587703	05/14/22 03:33	RS1	TAL SAC

**Client Sample ID: PW-205.1**  
**Date Collected : 04/ 27/ 22 09:38**  
**Date Received : 05/ 03/ 22 15:30**

**Lab Sample ID: 320-87434-14**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Rin	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analys t	Lab
Total/NA	Prep	3535			265.9 mL	10.0 mL	586797	05/11/22 05:23	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587703	05/14/22 03:44	RS1	TAL SAC

**Client Sample ID: PW-9001**  
**Date Collected : 04/ 27/ 22 10:05**  
**Date Received : 05/ 03/ 22 15:30**

**Lab Sample ID: 320-87434-15**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Rin	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analys t	Lab
Total/NA	Prep	3535			268.1 mL	10.0 mL	586797	05/11/22 05:23	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587703	05/14/22 04:15	RS1	TAL SAC

**Laboratory References:**

TAL SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

## Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

1

2

3

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# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	TAL SAC TAL SAC

**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: GUS Resid PFAS

Job ID: 320-87434-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-87434-1	PW-112	Water	04/28/22 10:15	05/03/22 15:30
320-87434-2	PW-040	Water	04/28/22 13:40	05/03/22 15:30
320-87434-3	PW-010	Water	04/27/22 11:32	05/03/22 15:30
320-87434-4	PW-038	Water	04/28/22 13:18	05/03/22 15:30
320-87434-5	PW-037	Water	04/28/22 12:34	05/03/22 15:30
320-87434-6	PW-012	Water	04/28/22 10:25	05/03/22 15:30
320-87434-7	PW-203	Water	04/27/22 07:45	05/03/22 15:30
320-87434-8	NPS Well	Water	04/27/22 10:15	05/03/22 15:30
320-87434-9	PW-039	Water	04/27/22 16:29	05/03/22 15:30
320-87434-10	PW-221	Water	04/27/22 11:05	05/03/22 15:30
320-87434-11	PW-401	Water	04/27/22 15:52	05/03/22 15:30
320-87434-12	PW-211	Water	04/27/22 09:05	05/03/22 15:30
320-87434-13	PW-059	Water	04/27/22 08:28	05/03/22 15:30
320-87434-14	PW-205.1	Water	04/27/22 09:38	05/03/22 15:30
320-87434-15	PW-9001	Water	04/27/22 10:05	05/03/22 15:30

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2355 Hill Road  
Fairbanks, AK 99709  
(907) 479-0600  
www.shannonwilson.com

# CHAIN-OF-CUSTODY RECORD

Page 1 of 1  
Laboratory Eurochem Consulting  
Attn: B. Altucker

Analytical Methods (include preservative if used)

Quote No: \_\_\_\_\_  
J-Flags:  Yes  No

Turn Around Time:  
 Normal  Rush  
Please Specify \_\_\_\_\_

Total Number of Containers	
1000 SWS 178	

Remarks/Matrix Composition/Grab? Sample Containers

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PW-11a		1015	4/28/22	2	ground water
PW-04b		1340	4/28/22	2	
PW-610		113a	4/27/22	2	
PW-038		1318	4/28/22	2	
PW-037		1234	4/28/22	2	
PW-01a		1025	4/28/22	2	
PW-203		0745	4/27/22	2	
NPS Well		1015	4/27/22	2	
PW-039		1629	4/27/22	2	
PW-221		1105	4/27/22	2	

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: _____ Printed Name: <u>A. Masters</u> Company: <u>Stw, Inc</u>	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____
Time: <u>1530</u> Date: <u>4/28/22</u>	Time: _____ Date: _____	Time: _____ Date: _____
Received By: 1.	Received By: 2.	Received By: 3.
Signature: _____ Printed Name: <u>Schubert</u> Company: _____	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____
Time: <u>1530</u> Date: <u>3-22</u>	Time: _____ Date: _____	Time: _____ Date: _____


Sample Receipt

Total No. of Containers: \_\_\_\_\_  
COC Seals/Intact? Y/N/NA \_\_\_\_\_  
Received Good Cond./Cold Temp: \_\_\_\_\_  
Delivery Method: \_\_\_\_\_

Project Information

Number: 102599-020  
Name: Gus Resid PNAS  
Contact: KPA  
Ongoing Project? Yes  No   
Sampler: ARM

Notes:

Barcode:   
320-87434 Chain of Custody

Distribution:  
Yellow - shipment - for consignee files  
Pink - Shannon & Wilson - job file



# CHAIN-OF-CUSTODY RECORD

Analytical Methods (include preservative if used)

Quote No: \_\_\_\_\_

Turn Around Time:  
 Normal  Rush

J-Flags:  Yes  No

Please Specify \_\_\_\_\_

Sample Identity	Lab No.	Time	Date Sampled	Remarks/Matrix Composition/Grab? Sample Containers	Total Number of Containers
PW-401		152	4/27/22		2
PW-211		0905	4/27/22		2
PW-059		0828			2
PW-205.1		0938			2
PW-9001		1005			2

**Project Information**

Number: \_\_\_\_\_

Name: See Page

Contact: \_\_\_\_\_

Ongoing Project? Yes  No

Sampler: \_\_\_\_\_

**Sample Receipt**

Total No. of Containers: \_\_\_\_\_

COC Seals/Intact? Y/N/NA \_\_\_\_\_

Received Good Cond./Cold \_\_\_\_\_

Temp: \_\_\_\_\_

Delivery Method: \_\_\_\_\_

**Notes:**

\_\_\_\_\_

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: _____ Time: <u>1530</u>	Signature: _____ Time: _____	Signature: _____ Time: _____
Printed Name: _____ Date: <u>4/27/22</u>	Printed Name: _____ Date: _____	Printed Name: _____ Date: _____
Company: <u>A. Masters</u>	Company: _____	Company: _____
Company: <u>Stw, Inc</u>	Company: _____	Company: _____
<b>Received By: 1.</b>	<b>Received By: 2.</b>	<b>Received By: 3.</b>
Signature: _____ Time: <u>1530</u>	Signature: _____ Time: _____	Signature: _____ Time: _____
Printed Name: _____ Date: <u>5/22/22</u>	Printed Name: _____ Date: _____	Printed Name: _____ Date: _____
Company: _____	Company: _____	Company: _____

# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-87434-1

**Login Number: 87434**

**List Source: Eurofins Sacramento**

**List Number: 1**

**Creator: Oropeza, Salvador**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	SEALS
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Laboratory Data Review Checklist

Completed By:

Veselina Yakimova

Title:

Geologist

Date:

May 19, 2022

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins TestAmerica Laboratories, Inc.

Laboratory Report Number:

320-87434-1

Laboratory Report Date:

May 18, 2022

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

Laboratory Report Date:

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

Analyses were performed by the Eurofins TestAmerica in West Sacramento, CA. The laboratory is approved by the DEC CS program and certified under the Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP) for the requested analyses.

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

Samples did not require preservation.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form notes that the samples were received in good condition.

Laboratory Report Date:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes  No  N/A  Comments:

- e. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

#### 4. Case Narrative

- a. Present and understandable?

Yes  No  N/A  Comments:

- b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

The case narrative indicates the following:

The Isotope Dilution Analyte (IDA) recovery associated with the sample *PW-012* is below the method recommended limit for d3-NMeFOSAA. Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batches 320-566059 and 320-586925.

- c. Were all corrective actions documented?

Yes  No  N/A  Comments:

N/A; see above.

- d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not note an effect on data quality or usability.  
See the following sections for our assessment.

#### 5. Samples Results

- a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

Laboratory Report Date:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

The reporting limit (RL) is less than the applicable DEC regulatory limit for the project.

e. Data quality or usability affected?

The data quality and/or usability was not affected; see above.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

There were no detections in the method blank samples associated with these project samples.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

Laboratory Report Date:

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A  Comments:

- ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; see above.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

Laboratory Report Date:

## c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

- i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

A MS/MSD was not analyzed with this work order; however, the laboratory analyzed LCS and LCSD samples to assess laboratory accuracy and precision.

- ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; MS and MSD samples were not analyzed for this work order.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

## d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes  No  N/A  Comments:



## Laboratory Report Date:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A  Comments:

The IDA for d3-NMEFOSAA associated with sample *PW-012* is below the method recommended limit.

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

d3-NMeFOSAA was not detected in sample *PW-012*. The non-detect reporting value is considered estimated and a “UJ” qualifier is applied.

- iv. Data quality or usability affected?

Comments:

The data quality was affected; see above. The data are considered usable with the applied qualifier, as noted above.

e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes  No  N/A  Comments:

PFAS are not volatile compounds. A trip blank is not required for the requested analysis.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

- iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; a trip blank is not required for the requested analysis.

- v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

Laboratory Report Date:

## f. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

- ii. Submitted blind to lab?

Yes  No  N/A  Comments:Field duplicate pairs *NPS Well/PW-9001* and *PW-012/PW-112* were submitted with this work order.

- iii. Precision – All relative percent differences (RPD) less than specified project objectives?
- 
- (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration $R_2$  = Field Duplicate ConcentrationYes  No  N/A  Comments:

RPD are within project objectives, where calculable.

- iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and/or usability was not affected; see above.

- g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

Reusable equipment was not used in the sampling procedure; therefore, an equipment blank is unnecessary.

- i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

- ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

- iii. Data quality or usability affected?

Comments:

No; see above.

Laboratory Report Date:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A  Comments:

No additional flags/qualifiers were applied.

## ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

Laboratory Job ID: 320-78305-1  
Client Project/Site: DRM GUS PFAS

For:  
Shannon & Wilson, Inc  
2355 Hill Rd.  
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger



---

Authorized for release by:  
9/10/2021 4:40:54 PM

David Alltucker, Project Manager I  
(916)374-4383  
[David.Alltucker@Eurofinset.com](mailto:David.Alltucker@Eurofinset.com)

### LINKS

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results through  
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*The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: DRM GUS PFAS

Job ID: 320-78305-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: DRM GUS PFAS

Job ID: 320-78305-1

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**Job ID: 320-78305-1**

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**Laboratory: Eurofins TestAmerica, Sacramento**

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**Narrative**

**Job Narrative  
320-78305-1**

**Receipt**

The samples were received on 8/31/2021 3:39 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 5.6° C.

**LCMS**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

**Organic Prep**

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-523092.

Method 3535: The following sample was observed to be yellow prior to extraction: PW-200 (320-78305-2).  
preparation batch 320-523092

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: DRM GUS PFAS

Job ID: 320-78305-1

## Client Sample ID: PW-200

Lab Sample ID: 320-78305-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	9.5		1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.3		1.7	0.21	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.8		1.7	0.71	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.98	J	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	15		1.7	0.48	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	58		1.7	0.45	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-200-C Port

Lab Sample ID: 320-78305-7

No Detections.

## Client Sample ID: PW-200-C Sink

Lab Sample ID: 320-78305-8

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DRM GUS PFAS

Job ID: 320-78305-1

**Client Sample ID: PW-200**

**Lab Sample ID: 320-78305-2**

Date Collected: 08/24/21 14:35

Matrix: Water

Date Received: 08/31/21 15:39

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	9.5		1.7	0.49	ng/L		09/07/21 19:22	09/09/21 02:28	1
Perfluoroheptanoic acid (PFHpA)	4.3		1.7	0.21	ng/L		09/07/21 19:22	09/09/21 02:28	1
Perfluorooctanoic acid (PFOA)	1.8		1.7	0.71	ng/L		09/07/21 19:22	09/09/21 02:28	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		09/07/21 19:22	09/09/21 02:28	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		09/07/21 19:22	09/09/21 02:28	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.92	ng/L		09/07/21 19:22	09/09/21 02:28	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46	ng/L		09/07/21 19:22	09/09/21 02:28	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/07/21 19:22	09/09/21 02:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.61	ng/L		09/07/21 19:22	09/09/21 02:28	1
Perfluorobutanesulfonic acid (PFBS)	0.98	J	1.7	0.17	ng/L		09/07/21 19:22	09/09/21 02:28	1
Perfluorohexanesulfonic acid (PFHxS)	15		1.7	0.48	ng/L		09/07/21 19:22	09/09/21 02:28	1
Perfluorooctanesulfonic acid (PFOS)	58		1.7	0.45	ng/L		09/07/21 19:22	09/09/21 02:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.2	1.0	ng/L		09/07/21 19:22	09/09/21 02:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.2	1.1	ng/L		09/07/21 19:22	09/09/21 02:28	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		09/07/21 19:22	09/09/21 02:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		09/07/21 19:22	09/09/21 02:28	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		09/07/21 19:22	09/09/21 02:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		09/07/21 19:22	09/09/21 02:28	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C2 PFHxA	67		50 - 150				09/07/21 19:22	09/09/21 02:28	1
13C4 PFHpA	68		50 - 150				09/07/21 19:22	09/09/21 02:28	1
13C4 PFOA	81		50 - 150				09/07/21 19:22	09/09/21 02:28	1
13C5 PFNA	68		50 - 150				09/07/21 19:22	09/09/21 02:28	1
13C2 PFDA	82		50 - 150				09/07/21 19:22	09/09/21 02:28	1
13C2 PFUnA	80		50 - 150				09/07/21 19:22	09/09/21 02:28	1
13C2 PFDoA	83		50 - 150				09/07/21 19:22	09/09/21 02:28	1
13C2 PFTeDA	82		50 - 150				09/07/21 19:22	09/09/21 02:28	1
13C3 PFBS	64		50 - 150				09/07/21 19:22	09/09/21 02:28	1
18O2 PFHxS	77		50 - 150				09/07/21 19:22	09/09/21 02:28	1
13C4 PFOS	74		50 - 150				09/07/21 19:22	09/09/21 02:28	1
d3-NMeFOSAA	69		50 - 150				09/07/21 19:22	09/09/21 02:28	1
d5-NEtFOSAA	71		50 - 150				09/07/21 19:22	09/09/21 02:28	1
13C3 HFPO-DA	63		50 - 150				09/07/21 19:22	09/09/21 02:28	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DRM GUS PFAS

Job ID: 320-78305-1

**Client Sample ID: PW-200-C Port**

**Lab Sample ID: 320-78305-7**

**Date Collected: 08/24/21 14:30**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.6	0.47	ng/L		09/07/21 19:22	09/09/21 02:38	1
Perfluoroheptanoic acid (PFHpA)	ND		1.6	0.20	ng/L		09/07/21 19:22	09/09/21 02:38	1
Perfluorooctanoic acid (PFOA)	ND		1.6	0.69	ng/L		09/07/21 19:22	09/09/21 02:38	1
Perfluorononanoic acid (PFNA)	ND		1.6	0.22	ng/L		09/07/21 19:22	09/09/21 02:38	1
Perfluorodecanoic acid (PFDA)	ND		1.6	0.25	ng/L		09/07/21 19:22	09/09/21 02:38	1
Perfluoroundecanoic acid (PFUnA)	ND		1.6	0.89	ng/L		09/07/21 19:22	09/09/21 02:38	1
Perfluorododecanoic acid (PFDoA)	ND		1.6	0.45	ng/L		09/07/21 19:22	09/09/21 02:38	1
Perfluorotridecanoic acid (PFTriA)	ND		1.6	1.1	ng/L		09/07/21 19:22	09/09/21 02:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.6	0.59	ng/L		09/07/21 19:22	09/09/21 02:38	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.6	0.16	ng/L		09/07/21 19:22	09/09/21 02:38	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.6	0.46	ng/L		09/07/21 19:22	09/09/21 02:38	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.6	0.44	ng/L		09/07/21 19:22	09/09/21 02:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.1	0.97	ng/L		09/07/21 19:22	09/09/21 02:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.1	1.1	ng/L		09/07/21 19:22	09/09/21 02:38	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.6	0.19	ng/L		09/07/21 19:22	09/09/21 02:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.2	1.2	ng/L		09/07/21 19:22	09/09/21 02:38	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.6	0.26	ng/L		09/07/21 19:22	09/09/21 02:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.6	0.32	ng/L		09/07/21 19:22	09/09/21 02:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	85		50 - 150	09/07/21 19:22	09/09/21 02:38	1
13C4 PFHpA	87		50 - 150	09/07/21 19:22	09/09/21 02:38	1
13C4 PFOA	90		50 - 150	09/07/21 19:22	09/09/21 02:38	1
13C5 PFNA	76		50 - 150	09/07/21 19:22	09/09/21 02:38	1
13C2 PFDA	92		50 - 150	09/07/21 19:22	09/09/21 02:38	1
13C2 PFUnA	87		50 - 150	09/07/21 19:22	09/09/21 02:38	1
13C2 PFDoA	87		50 - 150	09/07/21 19:22	09/09/21 02:38	1
13C2 PFTeDA	79		50 - 150	09/07/21 19:22	09/09/21 02:38	1
13C3 PFBS	82		50 - 150	09/07/21 19:22	09/09/21 02:38	1
18O2 PFHxS	88		50 - 150	09/07/21 19:22	09/09/21 02:38	1
13C4 PFOS	80		50 - 150	09/07/21 19:22	09/09/21 02:38	1
d3-NMeFOSAA	80		50 - 150	09/07/21 19:22	09/09/21 02:38	1
d5-NEtFOSAA	83		50 - 150	09/07/21 19:22	09/09/21 02:38	1
13C3 HFPO-DA	82		50 - 150	09/07/21 19:22	09/09/21 02:38	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DRM GUS PFAS

Job ID: 320-78305-1

**Client Sample ID: PW-200-C Sink**

**Lab Sample ID: 320-78305-8**

Date Collected: 08/24/21 13:58

Matrix: Water

Date Received: 08/31/21 15:39

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.49	ng/L		09/07/21 19:22	09/09/21 02:47	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		09/07/21 19:22	09/09/21 02:47	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.72	ng/L		09/07/21 19:22	09/09/21 02:47	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		09/07/21 19:22	09/09/21 02:47	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		09/07/21 19:22	09/09/21 02:47	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94	ng/L		09/07/21 19:22	09/09/21 02:47	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		09/07/21 19:22	09/09/21 02:47	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/07/21 19:22	09/09/21 02:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.62	ng/L		09/07/21 19:22	09/09/21 02:47	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		09/07/21 19:22	09/09/21 02:47	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.49	ng/L		09/07/21 19:22	09/09/21 02:47	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46	ng/L		09/07/21 19:22	09/09/21 02:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		09/07/21 19:22	09/09/21 02:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		09/07/21 19:22	09/09/21 02:47	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		09/07/21 19:22	09/09/21 02:47	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		09/07/21 19:22	09/09/21 02:47	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		09/07/21 19:22	09/09/21 02:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		09/07/21 19:22	09/09/21 02:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		50 - 150	09/07/21 19:22	09/09/21 02:47	1
13C4 PFHpA	94		50 - 150	09/07/21 19:22	09/09/21 02:47	1
13C4 PFOA	90		50 - 150	09/07/21 19:22	09/09/21 02:47	1
13C5 PFNA	81		50 - 150	09/07/21 19:22	09/09/21 02:47	1
13C2 PFDA	91		50 - 150	09/07/21 19:22	09/09/21 02:47	1
13C2 PFUnA	84		50 - 150	09/07/21 19:22	09/09/21 02:47	1
13C2 PFDoA	83		50 - 150	09/07/21 19:22	09/09/21 02:47	1
13C2 PFTeDA	79		50 - 150	09/07/21 19:22	09/09/21 02:47	1
13C3 PFBS	86		50 - 150	09/07/21 19:22	09/09/21 02:47	1
18O2 PFHxS	92		50 - 150	09/07/21 19:22	09/09/21 02:47	1
13C4 PFOS	83		50 - 150	09/07/21 19:22	09/09/21 02:47	1
d3-NMeFOSAA	80		50 - 150	09/07/21 19:22	09/09/21 02:47	1
d5-NEtFOSAA	82		50 - 150	09/07/21 19:22	09/09/21 02:47	1
13C3 HFPO-DA	94		50 - 150	09/07/21 19:22	09/09/21 02:47	1

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: DRM GUS PFAS

Job ID: 320-78305-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDaA (50-150)	PFTDA (50-150)
320-78305-2	PW-200	67	68	81	68	82	80	83	82
320-78305-7	PW-200-C Port	85	87	90	76	92	87	87	79
320-78305-8	PW-200-C Sink	91	94	90	81	91	84	83	79
LCS 320-523092/2-A	Lab Control Sample	91	96	94	84	91	91	94	81
LCSD 320-523092/3-A	Lab Control Sample Dup	85	90	90	79	90	85	87	78
MB 320-523092/1-A	Method Blank	87	88	91	81	91	86	91	84

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-78305-2	PW-200	64	77	74	69	71	63
320-78305-7	PW-200-C Port	82	88	80	80	83	82
320-78305-8	PW-200-C Sink	86	92	83	80	82	94
LCS 320-523092/2-A	Lab Control Sample	87	94	83	90	90	85
LCSD 320-523092/3-A	Lab Control Sample Dup	88	95	80	87	81	87
MB 320-523092/1-A	Method Blank	83	89	81	88	93	92

#### Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DRM GUS PFAS

Job ID: 320-78305-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-523092/1-A**  
**Matrix: Water**  
**Analysis Batch: 523296**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 523092**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		09/07/21 19:22	09/09/21 02:00	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		09/07/21 19:22	09/09/21 02:00	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		09/07/21 19:22	09/09/21 02:00	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		09/07/21 19:22	09/09/21 02:00	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		09/07/21 19:22	09/09/21 02:00	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		09/07/21 19:22	09/09/21 02:00	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		09/07/21 19:22	09/09/21 02:00	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		09/07/21 19:22	09/09/21 02:00	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		09/07/21 19:22	09/09/21 02:00	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		09/07/21 19:22	09/09/21 02:00	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		09/07/21 19:22	09/09/21 02:00	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		09/07/21 19:22	09/09/21 02:00	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		09/07/21 19:22	09/09/21 02:00	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		09/07/21 19:22	09/09/21 02:00	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		09/07/21 19:22	09/09/21 02:00	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		09/07/21 19:22	09/09/21 02:00	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		09/07/21 19:22	09/09/21 02:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		09/07/21 19:22	09/09/21 02:00	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	87		50 - 150	09/07/21 19:22	09/09/21 02:00	1
13C4 PFHpA	88		50 - 150	09/07/21 19:22	09/09/21 02:00	1
13C4 PFOA	91		50 - 150	09/07/21 19:22	09/09/21 02:00	1
13C5 PFNA	81		50 - 150	09/07/21 19:22	09/09/21 02:00	1
13C2 PFDA	91		50 - 150	09/07/21 19:22	09/09/21 02:00	1
13C2 PFUnA	86		50 - 150	09/07/21 19:22	09/09/21 02:00	1
13C2 PFDoA	91		50 - 150	09/07/21 19:22	09/09/21 02:00	1
13C2 PFTeDA	84		50 - 150	09/07/21 19:22	09/09/21 02:00	1
13C3 PFBS	83		50 - 150	09/07/21 19:22	09/09/21 02:00	1
18O2 PFHxS	89		50 - 150	09/07/21 19:22	09/09/21 02:00	1
13C4 PFOS	81		50 - 150	09/07/21 19:22	09/09/21 02:00	1
d3-NMeFOSAA	88		50 - 150	09/07/21 19:22	09/09/21 02:00	1
d5-NEtFOSAA	93		50 - 150	09/07/21 19:22	09/09/21 02:00	1
13C3 HFPO-DA	92		50 - 150	09/07/21 19:22	09/09/21 02:00	1

**Lab Sample ID: LCS 320-523092/2-A**  
**Matrix: Water**  
**Analysis Batch: 523296**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 523092**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	40.0	39.1		ng/L		98	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	40.4		ng/L		101	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	41.9		ng/L		105	71 - 133
Perfluorononanoic acid (PFNA)	40.0	47.0		ng/L		118	69 - 130

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: DRM GUS PFAS

Job ID: 320-78305-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-523092/2-A**  
**Matrix: Water**  
**Analysis Batch: 523296**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 523092**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	40.5		ng/L		101	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	43.4		ng/L		108	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	39.5		ng/L		99	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	38.2		ng/L		96	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	41.4		ng/L		104	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	36.8		ng/L		104	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.6		ng/L		101	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	40.3		ng/L		108	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	44.7		ng/L		112	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	38.4		ng/L		96	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	43.6		ng/L		117	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	46.8		ng/L		117	72 - 132
11-Chloroeicosadecafluoro-3-oxaundecane-1-sulfonic acid	37.7	40.8		ng/L		108	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	42.4		ng/L		112	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	91		50 - 150
13C4 PFHpA	96		50 - 150
13C4 PFOA	94		50 - 150
13C5 PFNA	84		50 - 150
13C2 PFDA	91		50 - 150
13C2 PFUnA	91		50 - 150
13C2 PFDoA	94		50 - 150
13C2 PFTeDA	81		50 - 150
13C3 PFBS	87		50 - 150
18O2 PFHxS	94		50 - 150
13C4 PFOS	83		50 - 150
d3-NMeFOSAA	90		50 - 150
d5-NEtFOSAA	90		50 - 150
13C3 HFPO-DA	85		50 - 150

**Lab Sample ID: LCSD 320-523092/3-A**  
**Matrix: Water**  
**Analysis Batch: 523296**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 523092**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		RPD
							Limits	RPD	
Perfluorohexanoic acid (PFHxA)	40.0	40.8		ng/L		102	72 - 129	4	30
Perfluoroheptanoic acid (PFHpA)	40.0	44.7		ng/L		112	72 - 130	10	30
Perfluorooctanoic acid (PFOA)	40.0	41.2		ng/L		103	71 - 133	2	30

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: DRM GUS PFAS

Job ID: 320-78305-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-523092/3-A**  
**Matrix: Water**  
**Analysis Batch: 523296**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 523092**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	46.7		ng/L		117	69 - 130	1	30
Perfluorodecanoic acid (PFDA)	40.0	38.6		ng/L		96	71 - 129	5	30
Perfluoroundecanoic acid (PFUnA)	40.0	44.7		ng/L		112	69 - 133	3	30
Perfluorododecanoic acid (PFDoA)	40.0	41.9		ng/L		105	72 - 134	6	30
Perfluorotridecanoic acid (PFTriA)	40.0	42.0		ng/L		105	65 - 144	9	30
Perfluorotetradecanoic acid (PFTeA)	40.0	43.9		ng/L		110	71 - 132	6	30
Perfluorobutanesulfonic acid (PFBS)	35.4	34.4		ng/L		97	72 - 130	7	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	38.4		ng/L		105	68 - 131	5	30
Perfluorooctanesulfonic acid (PFOS)	37.1	41.4		ng/L		112	65 - 140	3	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.4		ng/L		106	65 - 136	5	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.6		ng/L		101	61 - 135	6	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	44.8		ng/L		120	77 - 137	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	45.0		ng/L		113	72 - 132	4	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	43.5		ng/L		115	76 - 136	6	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	46.6		ng/L		124	81 - 141	9	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	85		50 - 150
13C4 PFHpA	90		50 - 150
13C4 PFOA	90		50 - 150
13C5 PFNA	79		50 - 150
13C2 PFDA	90		50 - 150
13C2 PFUnA	85		50 - 150
13C2 PFDoA	87		50 - 150
13C2 PFTeDA	78		50 - 150
13C3 PFBS	88		50 - 150
18O2 PFHxS	95		50 - 150
13C4 PFOS	80		50 - 150
d3-NMeFOSAA	87		50 - 150
d5-NEtFOSAA	81		50 - 150
13C3 HFPO-DA	87		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: DRM GUS PFAS

Job ID: 320-78305-1

## LCMS

### Prep Batch: 523092

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78305-2	PW-200	Total/NA	Water	3535	
320-78305-7	PW-200-C Port	Total/NA	Water	3535	
320-78305-8	PW-200-C Sink	Total/NA	Water	3535	
MB 320-523092/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-523092/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-523092/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 523296

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78305-2	PW-200	Total/NA	Water	EPA 537(Mod)	523092
320-78305-7	PW-200-C Port	Total/NA	Water	EPA 537(Mod)	523092
320-78305-8	PW-200-C Sink	Total/NA	Water	EPA 537(Mod)	523092
MB 320-523092/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	523092
LCS 320-523092/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	523092
LCSD 320-523092/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	523092



# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: DRM GUS PFAS

Job ID: 320-78305-1

## Client Sample ID: PW-200

Date Collected: 08/24/21 14:35

Date Received: 08/31/21 15:39

## Lab Sample ID: 320-78305-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			298.2 mL	10.0 mL	523092	09/07/21 19:22	AP	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523296	09/09/21 02:28	MYV	TAL SAC

## Client Sample ID: PW-200-C Port

Date Collected: 08/24/21 14:30

Date Received: 08/31/21 15:39

## Lab Sample ID: 320-78305-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			308.1 mL	10.0 mL	523092	09/07/21 19:22	AP	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523296	09/09/21 02:38	MYV	TAL SAC

## Client Sample ID: PW-200-C Sink

Date Collected: 08/24/21 13:58

Date Received: 08/31/21 15:39

## Lab Sample ID: 320-78305-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			293.7 mL	10.0 mL	523092	09/07/21 19:22	AP	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523296	09/09/21 02:47	MYV	TAL SAC

### Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: DRM GUS PFAS

Job ID: 320-78305-1

## Laboratory: Eurofins TestAmerica, Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

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# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: DRM GUS PFAS

Job ID: 320-78305-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	TAL SAC TAL SAC

#### Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: DRM GUS PFAS

Job ID: 320-78305-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-78305-2	PW-200	Water	08/24/21 14:35	08/31/21 15:39
320-78305-7	PW-200-C Port	Water	08/24/21 14:30	08/31/21 15:39
320-78305-8	PW-200-C Sink	Water	08/24/21 13:58	08/31/21 15:39

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# CHAIN-OF-CUSTODY RECORD

Page 1 of 1  
 Laboratory Test America  
 Attn: D. Alltucker

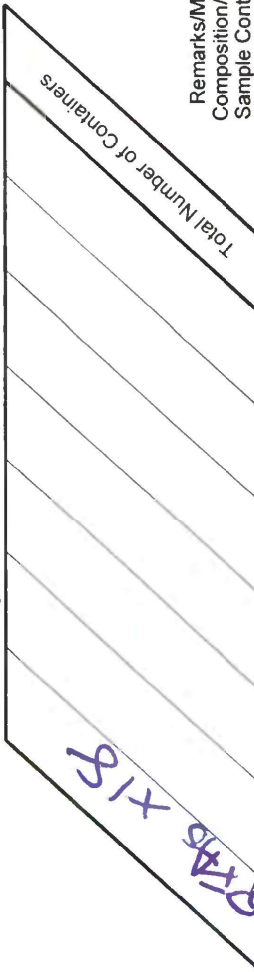
Analytical Methods (include preservative if used)

Quote No: \_\_\_\_\_

Turn Around Time:  
 Normal  Rush

Please Specify \_\_\_\_\_

J-Flags:  Yes  No



Sample Identity	Lab No.	Time	Date Sampled	Remarks/Matrix Composition/Grab? Sample Containers
*PW-200-Unit 1-C Port *HOLD*	*1416	8/24/21	X	grandwater *HOLD*
PW-200	1435			*HOLD*
*PW-200-Unit 2-C Port *HOLD*	1420			*HOLD*
*PW-200 -F Port *HOLD*	1411			*HOLD*
*PW-200-Unit 4-C Port *HOLD*	1427			*HOLD*
*PW-200-Unit 3-C Port *HOLD*	1423			*HOLD*
*PW-200-C Port Composite	1430			*HOLD*
PW-200-SINK	1358			



Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Number: <u>101513-001</u>	Total No. of Containers: _____	Signature: _____	Signature: _____	Signature: _____
Name: <u>DRM GUS PFAU</u>	COC Seals/Intact? Y/N/NA _____	Time: <u>0800</u>	Time: _____	Time: _____
Contact: <u>KRF</u>	Received Good Cond./Cold _____	Date: <u>8/27/21</u>	Date: _____	Date: _____
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Temp: _____	Printed Name: <u>A. Masters</u>	Printed Name: _____	Printed Name: _____
Sampler: <u>ARM</u>	Delivery Method: _____	Company: <u>Shannon &amp; Wilson</u>	Company: _____	Company: _____
Notes: _____		Received By: 1.	Received By: 2.	Received By: 3.
		Signature: _____	Signature: _____	Signature: _____
		Time: <u>1359</u>	Time: _____	Time: _____
		Date: <u>8/27/21</u>	Date: _____	Date: _____
		Printed Name: <u>D. Alltucker</u>	Printed Name: _____	Printed Name: _____
		Company: _____	Company: _____	Company: _____

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-78305-1

**Login Number: 78305**

**List Source: Eurofins TestAmerica, Sacramento**

**List Number: 1**

**Creator: Her, David A**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	15045291/1504528
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Laboratory Data Review Checklist

Completed By:

Michael Jaramillo

Title:

Senior Chemist

Date:

September 16, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories (TestAmerica)

Laboratory Report Number:

320-78305-1

Laboratory Report Date:

September 10, 2021

CS Site Name:

DRM Gustavus PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

320-78305-1

Laboratory Report Date:

September 10, 2021

CS Site Name:

DRM Gustavus PFAS

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

The DEC certified TestAmerica of West Sacramento, CA for the analysis of per- and polyfluorinated alkyl substances (PFAS) on February 11, 2021 by PFAS LCMSMS compliant with QSM Version 5.3 Table B-15. These reported analytes were included in the DEC’s Contaminated Sites Laboratory Approval 17-020.

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

The samples were analyzed by TestAmerica Laboratories of West Sacramento, CA.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:



320-78305-1

Laboratory Report Date:

September 10, 2021

CS Site Name:

DRM Gustavus PFAS

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form notes that the samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes  No  N/A  Comments:

e. Data quality or usability affected?

Comments:

Data quality and/or usability are not affected.

4. Case Narrative

a. Present and understandable?

Yes  No  N/A  Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

Insufficient volume was available to perform a matrix spike (MS)/ MS duplicate (MSD) associated with preparation batch 320-523092.

Sample *PW-200* was observed to be yellow in color prior to extraction.

c. Were all corrective actions documented?

Yes  No  N/A  Comments:

The laboratory does not discuss any corrective actions in the case narrative. However, a laboratory control sample (LCS) and LCS duplicate (LCSD) were reported for preparation batch 320-523092 to assess laboratory accuracy and precision.

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d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not note an effect on the data quality or usability.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not included with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

e. Data quality or usability affected?

Data quality or usability are not affected.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

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ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

v. Data quality or usability affected?

Comments:

The results are unaffected; see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A  Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals/inorganics were not included in this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

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CS Site Name:

DRM Gustavus PFAS

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; percent recoveries and RPDs within laboratory acceptance criteria.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

No qualification of the data is required; samples not affected.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality or usability is not affected.

- c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

- i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

There was insufficient sample volume to perform a MS/MSD. Refer to Section 6.b for assessment of laboratory accuracy and precision using the LCS/LCSD sample pair.

- ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals/inorganics were not included with this work order.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

See above.

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- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A  Comments:

See above.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; see above.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality or usability is not affected.

- d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes  No  N/A  Comments:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A  Comments:

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

No qualification of the data is required; samples not affected.

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iv. Data quality or usability affected?

Comments:

Data quality or usability are not affected.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?  
(If not, enter explanation below.)

Yes  No  N/A  Comments:

Volatile compounds were not requested for this project. A trip blank is not required for the requested analyses.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?  
(If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

See above.

iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

See above.

v. Data quality or usability affected?

Comments:

Data quality or usability are not affected.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

Field-duplicate samples were not submitted with this work order.

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ii. Submitted blind to lab?

Yes  No  N/A  Comments:

See above.

iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R<sub>1</sub> = Sample Concentration  
R<sub>2</sub> = Field Duplicate Concentration

Yes  No  N/A  Comments:

See above.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality or usability are not affected.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

The sample was not collected with reusable equipment; therefore, an equipment blank is not necessary.

i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; see above.

iii. Data quality or usability affected?

Comments:

Data quality or usability are not affected.

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7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A       Comments:

N/A



## ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

Laboratory Job ID: 320-81058-1  
Client Project/Site: GST Risk

**For:**

Shannon & Wilson, Inc  
2355 Hill Rd.  
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger



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Authorized for release by:  
11/12/2021 4:10:42 PM

David Alltucker, Project Manager I  
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### LINKS

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*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: GST Risk

Job ID: 320-81058-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: GST Risk

Job ID: 320-81058-1

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**Job ID: 320-81058-1**

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**Laboratory: Eurofins TestAmerica, Sacramento**

## Narrative

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### Job Narrative 320-81058-1

#### Receipt

The samples were received on 10/29/2021 3:04 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.2° C.

#### LCMS

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-540170.

Method 3535: The following sample was yellow and contained floating particulates in the sample bottle prior to extraction: PW-200 (320-81058-8).

Method 3535: The following samples were preserved with trizma: PW-200-sink (320-81058-1), PW-200-C Port Composite (320-81058-7) and PW-200 (320-81058-8). Thus, the MB, LCS and LCSD also contain trizma.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: GST Risk

Job ID: 320-81058-1

**Client Sample ID: PW-200-sink**

**Lab Sample ID: 320-81058-1**

No Detections.

**Client Sample ID: PW-200-C Port Composite**

**Lab Sample ID: 320-81058-7**

No Detections.

**Client Sample ID: PW-200**

**Lab Sample ID: 320-81058-8**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	6.9		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.8		1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.2	J	1.9	0.80	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.57	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	10		1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	54		1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST Risk

Job ID: 320-81058-1

**Client Sample ID: PW-200-sink**

**Lab Sample ID: 320-81058-1**

**Date Collected: 10/25/21 12:40**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		11/05/21 05:30	11/10/21 16:10	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		11/05/21 05:30	11/10/21 16:10	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		11/05/21 05:30	11/10/21 16:10	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/05/21 05:30	11/10/21 16:10	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/05/21 05:30	11/10/21 16:10	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/05/21 05:30	11/10/21 16:10	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		11/05/21 05:30	11/10/21 16:10	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/05/21 05:30	11/10/21 16:10	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		11/05/21 05:30	11/10/21 16:10	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/05/21 05:30	11/10/21 16:10	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		11/05/21 05:30	11/10/21 16:10	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		11/05/21 05:30	11/10/21 16:10	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		11/05/21 05:30	11/10/21 16:10	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		11/05/21 05:30	11/10/21 16:10	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		11/05/21 05:30	11/10/21 16:10	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/05/21 05:30	11/10/21 16:10	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/05/21 05:30	11/10/21 16:10	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		11/05/21 05:30	11/10/21 16:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		50 - 150	11/05/21 05:30	11/10/21 16:10	1
13C4 PFHpA	92		50 - 150	11/05/21 05:30	11/10/21 16:10	1
13C4 PFOA	96		50 - 150	11/05/21 05:30	11/10/21 16:10	1
13C5 PFNA	85		50 - 150	11/05/21 05:30	11/10/21 16:10	1
13C2 PFDA	90		50 - 150	11/05/21 05:30	11/10/21 16:10	1
13C2 PFUnA	96		50 - 150	11/05/21 05:30	11/10/21 16:10	1
13C2 PFDoA	90		50 - 150	11/05/21 05:30	11/10/21 16:10	1
13C2 PFTeDA	88		50 - 150	11/05/21 05:30	11/10/21 16:10	1
13C3 PFBS	119		50 - 150	11/05/21 05:30	11/10/21 16:10	1
18O2 PFHxS	94		50 - 150	11/05/21 05:30	11/10/21 16:10	1
13C4 PFOS	93		50 - 150	11/05/21 05:30	11/10/21 16:10	1
d3-NMeFOSAA	69		50 - 150	11/05/21 05:30	11/10/21 16:10	1
d5-NEtFOSAA	74		50 - 150	11/05/21 05:30	11/10/21 16:10	1
13C3 HFPO-DA	91		50 - 150	11/05/21 05:30	11/10/21 16:10	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST Risk

Job ID: 320-81058-1

**Client Sample ID: PW-200-C Port Composite**

**Lab Sample ID: 320-81058-7**

Date Collected: 10/25/21 13:12

Matrix: Water

Date Received: 10/29/21 15:04

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.56	ng/L		11/05/21 05:30	11/10/21 16:20	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		11/05/21 05:30	11/10/21 16:20	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		11/05/21 05:30	11/10/21 16:20	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		11/05/21 05:30	11/10/21 16:20	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		11/05/21 05:30	11/10/21 16:20	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		11/05/21 05:30	11/10/21 16:20	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		11/05/21 05:30	11/10/21 16:20	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		11/05/21 05:30	11/10/21 16:20	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		11/05/21 05:30	11/10/21 16:20	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/05/21 05:30	11/10/21 16:20	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.55	ng/L		11/05/21 05:30	11/10/21 16:20	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		11/05/21 05:30	11/10/21 16:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		11/05/21 05:30	11/10/21 16:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.3	ng/L		11/05/21 05:30	11/10/21 16:20	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		11/05/21 05:30	11/10/21 16:20	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.4	ng/L		11/05/21 05:30	11/10/21 16:20	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		11/05/21 05:30	11/10/21 16:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		11/05/21 05:30	11/10/21 16:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	81		50 - 150	11/05/21 05:30	11/10/21 16:20	1
13C4 PFHpA	89		50 - 150	11/05/21 05:30	11/10/21 16:20	1
13C4 PFOA	93		50 - 150	11/05/21 05:30	11/10/21 16:20	1
13C5 PFNA	87		50 - 150	11/05/21 05:30	11/10/21 16:20	1
13C2 PFDA	84		50 - 150	11/05/21 05:30	11/10/21 16:20	1
13C2 PFUnA	86		50 - 150	11/05/21 05:30	11/10/21 16:20	1
13C2 PFDoA	81		50 - 150	11/05/21 05:30	11/10/21 16:20	1
13C2 PFTeDA	90		50 - 150	11/05/21 05:30	11/10/21 16:20	1
13C3 PFBS	113		50 - 150	11/05/21 05:30	11/10/21 16:20	1
18O2 PFHxS	86		50 - 150	11/05/21 05:30	11/10/21 16:20	1
13C4 PFOS	82		50 - 150	11/05/21 05:30	11/10/21 16:20	1
d3-NMeFOSAA	63		50 - 150	11/05/21 05:30	11/10/21 16:20	1
d5-NEtFOSAA	66		50 - 150	11/05/21 05:30	11/10/21 16:20	1
13C3 HFPO-DA	91		50 - 150	11/05/21 05:30	11/10/21 16:20	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST Risk

Job ID: 320-81058-1

**Client Sample ID: PW-200**

**Lab Sample ID: 320-81058-8**

Date Collected: 10/25/21 13:20

Matrix: Water

Date Received: 10/29/21 15:04

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	6.9		1.9	0.54	ng/L		11/05/21 05:30	11/10/21 16:31	1
Perfluoroheptanoic acid (PFHpA)	2.8		1.9	0.23	ng/L		11/05/21 05:30	11/10/21 16:31	1
Perfluorooctanoic acid (PFOA)	1.2	J	1.9	0.80	ng/L		11/05/21 05:30	11/10/21 16:31	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/05/21 05:30	11/10/21 16:31	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/05/21 05:30	11/10/21 16:31	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/05/21 05:30	11/10/21 16:31	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		11/05/21 05:30	11/10/21 16:31	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/05/21 05:30	11/10/21 16:31	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		11/05/21 05:30	11/10/21 16:31	1
Perfluorobutanesulfonic acid (PFBS)	0.57	J	1.9	0.19	ng/L		11/05/21 05:30	11/10/21 16:31	1
Perfluorohexanesulfonic acid (PFHxS)	10		1.9	0.53	ng/L		11/05/21 05:30	11/10/21 16:31	1
Perfluorooctanesulfonic acid (PFOS)	54		1.9	0.51	ng/L		11/05/21 05:30	11/10/21 16:31	1
N-methylperfluorooctanesulfonamideacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		11/05/21 05:30	11/10/21 16:31	1
N-ethylperfluorooctanesulfonamideacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		11/05/21 05:30	11/10/21 16:31	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		11/05/21 05:30	11/10/21 16:31	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/05/21 05:30	11/10/21 16:31	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/05/21 05:30	11/10/21 16:31	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		11/05/21 05:30	11/10/21 16:31	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C2 PFHxA	80		50 - 150				11/05/21 05:30	11/10/21 16:31	1
13C4 PFHpA	92		50 - 150				11/05/21 05:30	11/10/21 16:31	1
13C4 PFOA	92		50 - 150				11/05/21 05:30	11/10/21 16:31	1
13C5 PFNA	84		50 - 150				11/05/21 05:30	11/10/21 16:31	1
13C2 PFDA	84		50 - 150				11/05/21 05:30	11/10/21 16:31	1
13C2 PFUnA	79		50 - 150				11/05/21 05:30	11/10/21 16:31	1
13C2 PFDoA	81		50 - 150				11/05/21 05:30	11/10/21 16:31	1
13C2 PFTeDA	90		50 - 150				11/05/21 05:30	11/10/21 16:31	1
13C3 PFBS	105		50 - 150				11/05/21 05:30	11/10/21 16:31	1
18O2 PFHxS	82		50 - 150				11/05/21 05:30	11/10/21 16:31	1
13C4 PFOS	83		50 - 150				11/05/21 05:30	11/10/21 16:31	1
d3-NMeFOSAA	57		50 - 150				11/05/21 05:30	11/10/21 16:31	1
d5-NEtFOSAA	62		50 - 150				11/05/21 05:30	11/10/21 16:31	1
13C3 HFPO-DA	91		50 - 150				11/05/21 05:30	11/10/21 16:31	1



# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: GST Risk

Job ID: 320-81058-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDaA (50-150)	PFTDA (50-150)
320-81058-1	PW-200-sink	89	92	96	85	90	96	90	88
320-81058-7	PW-200-C Port Composite	81	89	93	87	84	86	81	90
320-81058-8	PW-200	80	92	92	84	84	79	81	90
LCS 320-540170/2-A	Lab Control Sample	88	94	97	90	86	85	81	85
LCSD 320-540170/3-A	Lab Control Sample Dup	95	104	100	98	89	93	94	97
MB 320-540170/1-A	Method Blank	95	98	100	94	93	98	91	90

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-81058-1	PW-200-sink	119	94	93	69	74	91
320-81058-7	PW-200-C Port Composite	113	86	82	63	66	91
320-81058-8	PW-200	105	82	83	57	62	91
LCS 320-540170/2-A	Lab Control Sample	120	93	94	66	69	95
LCSD 320-540170/3-A	Lab Control Sample Dup	128	104	101	71	70	102
MB 320-540170/1-A	Method Blank	113	98	101	76	72	99

#### Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST Risk

Job ID: 320-81058-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-540170/1-A**  
**Matrix: Water**  
**Analysis Batch: 541496**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 540170**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		11/05/21 05:30	11/10/21 15:40	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/05/21 05:30	11/10/21 15:40	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		11/05/21 05:30	11/10/21 15:40	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/05/21 05:30	11/10/21 15:40	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/05/21 05:30	11/10/21 15:40	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/05/21 05:30	11/10/21 15:40	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/05/21 05:30	11/10/21 15:40	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/05/21 05:30	11/10/21 15:40	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		11/05/21 05:30	11/10/21 15:40	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/05/21 05:30	11/10/21 15:40	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		11/05/21 05:30	11/10/21 15:40	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		11/05/21 05:30	11/10/21 15:40	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		11/05/21 05:30	11/10/21 15:40	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/05/21 05:30	11/10/21 15:40	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/05/21 05:30	11/10/21 15:40	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/05/21 05:30	11/10/21 15:40	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/05/21 05:30	11/10/21 15:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/05/21 05:30	11/10/21 15:40	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		50 - 150	11/05/21 05:30	11/10/21 15:40	1
13C4 PFHpA	98		50 - 150	11/05/21 05:30	11/10/21 15:40	1
13C4 PFOA	100		50 - 150	11/05/21 05:30	11/10/21 15:40	1
13C5 PFNA	94		50 - 150	11/05/21 05:30	11/10/21 15:40	1
13C2 PFDA	93		50 - 150	11/05/21 05:30	11/10/21 15:40	1
13C2 PFUnA	98		50 - 150	11/05/21 05:30	11/10/21 15:40	1
13C2 PFDoA	91		50 - 150	11/05/21 05:30	11/10/21 15:40	1
13C2 PFTeDA	90		50 - 150	11/05/21 05:30	11/10/21 15:40	1
13C3 PFBS	113		50 - 150	11/05/21 05:30	11/10/21 15:40	1
18O2 PFHxS	98		50 - 150	11/05/21 05:30	11/10/21 15:40	1
13C4 PFOS	101		50 - 150	11/05/21 05:30	11/10/21 15:40	1
d3-NMeFOSAA	76		50 - 150	11/05/21 05:30	11/10/21 15:40	1
d5-NEtFOSAA	72		50 - 150	11/05/21 05:30	11/10/21 15:40	1
13C3 HFPO-DA	99		50 - 150	11/05/21 05:30	11/10/21 15:40	1

**Lab Sample ID: LCS 320-540170/2-A**  
**Matrix: Water**  
**Analysis Batch: 541496**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 540170**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	40.0	40.2		ng/L		101	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	39.5		ng/L		99	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	37.2		ng/L		93	71 - 133
Perfluorononanoic acid (PFNA)	40.0	38.9		ng/L		97	69 - 130

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST Risk

Job ID: 320-81058-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-540170/2-A**  
**Matrix: Water**  
**Analysis Batch: 541496**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 540170**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	40.0		ng/L		100	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	40.2		ng/L		100	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	41.0		ng/L		103	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	42.8		ng/L		107	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	38.9		ng/L		97	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	30.3		ng/L		86	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.5		ng/L		95	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	35.8		ng/L		96	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	34.8		ng/L		87	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.8		ng/L		99	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	36.7		ng/L		98	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.4		ng/L		99	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	39.7		ng/L		105	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	36.4		ng/L		97	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	88		50 - 150
13C4 PFHpA	94		50 - 150
13C4 PFOA	97		50 - 150
13C5 PFNA	90		50 - 150
13C2 PFDA	86		50 - 150
13C2 PFUnA	85		50 - 150
13C2 PFDoA	81		50 - 150
13C2 PFTeDA	85		50 - 150
13C3 PFBS	120		50 - 150
18O2 PFHxS	93		50 - 150
13C4 PFOS	94		50 - 150
d3-NMeFOSAA	66		50 - 150
d5-NEtFOSAA	69		50 - 150
13C3 HFPO-DA	95		50 - 150

**Lab Sample ID: LCSD 320-540170/3-A**  
**Matrix: Water**  
**Analysis Batch: 541496**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 540170**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		RPD Limit
							Limits	RPD	
Perfluorohexanoic acid (PFHxA)	40.0	41.0		ng/L		102	72 - 129	2	30
Perfluoroheptanoic acid (PFHpA)	40.0	40.2		ng/L		101	72 - 130	2	30
Perfluorooctanoic acid (PFOA)	40.0	39.1		ng/L		98	71 - 133	5	30

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST Risk

Job ID: 320-81058-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-540170/3-A**  
**Matrix: Water**  
**Analysis Batch: 541496**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 540170**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	38.8		ng/L		97	69 - 130	0	30
Perfluorodecanoic acid (PFDA)	40.0	40.4		ng/L		101	71 - 129	1	30
Perfluoroundecanoic acid (PFUnA)	40.0	39.2		ng/L		98	69 - 133	2	30
Perfluorododecanoic acid (PFDoA)	40.0	42.2		ng/L		105	72 - 134	3	30
Perfluorotridecanoic acid (PFTriA)	40.0	40.8		ng/L		102	65 - 144	5	30
Perfluorotetradecanoic acid (PFTeA)	40.0	38.7		ng/L		97	71 - 132	1	30
Perfluorobutanesulfonic acid (PFBS)	35.4	29.8		ng/L		84	72 - 130	2	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.1		ng/L		99	68 - 131	4	30
Perfluorooctanesulfonic acid (PFOS)	37.1	34.5		ng/L		93	65 - 140	4	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	35.4		ng/L		88	65 - 136	2	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.9		ng/L		105	61 - 135	5	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	39.9		ng/L		107	77 - 137	8	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.3		ng/L		98	72 - 132	0	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	39.6		ng/L		105	76 - 136	0	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	39.4		ng/L		104	81 - 141	8	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	95		50 - 150
13C4 PFHpA	104		50 - 150
13C4 PFOA	100		50 - 150
13C5 PFNA	98		50 - 150
13C2 PFDA	89		50 - 150
13C2 PFUnA	93		50 - 150
13C2 PFDoA	94		50 - 150
13C2 PFTeDA	97		50 - 150
13C3 PFBS	128		50 - 150
18O2 PFHxS	104		50 - 150
13C4 PFOS	101		50 - 150
d3-NMeFOSAA	71		50 - 150
d5-NEtFOSAA	70		50 - 150
13C3 HFPO-DA	102		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: GST Risk

Job ID: 320-81058-1

## LCMS

### Prep Batch: 540170

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-81058-1	PW-200-sink	Total/NA	Water	3535	
320-81058-7	PW-200-C Port Composite	Total/NA	Water	3535	
320-81058-8	PW-200	Total/NA	Water	3535	
MB 320-540170/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-540170/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-540170/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 541496

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-81058-1	PW-200-sink	Total/NA	Water	EPA 537(Mod)	540170
320-81058-7	PW-200-C Port Composite	Total/NA	Water	EPA 537(Mod)	540170
320-81058-8	PW-200	Total/NA	Water	EPA 537(Mod)	540170
MB 320-540170/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	540170
LCS 320-540170/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	540170
LCSD 320-540170/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	540170

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: GST Risk

Job ID: 320-81058-1

## Client Sample ID: PW-200-sink

Lab Sample ID: 320-81058-1

Date Collected: 10/25/21 12:40

Matrix: Water

Date Received: 10/29/21 15:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268.6 mL	10.0 mL	540170	11/05/21 05:30	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			541496	11/10/21 16:10	S1M	TAL SAC

## Client Sample ID: PW-200-C Port Composite

Lab Sample ID: 320-81058-7

Date Collected: 10/25/21 13:12

Matrix: Water

Date Received: 10/29/21 15:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			259.6 mL	10.0 mL	540170	11/05/21 05:30	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			541496	11/10/21 16:20	S1M	TAL SAC

## Client Sample ID: PW-200

Lab Sample ID: 320-81058-8

Date Collected: 10/25/21 13:20

Matrix: Water

Date Received: 10/29/21 15:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			267.2 mL	10.0 mL	540170	11/05/21 05:30	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			541496	11/10/21 16:31	S1M	TAL SAC

### Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: GST Risk

Job ID: 320-81058-1

## Laboratory: Eurofins TestAmerica, Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

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# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: GST Risk

Job ID: 320-81058-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	TAL SAC TAL SAC

**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600





# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: GST Risk

Job ID: 320-81058-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-81058-1	PW-200-sink	Water	10/25/21 12:40	10/29/21 15:04
320-81058-7	PW-200-C Port Composite	Water	10/25/21 13:12	10/29/21 15:04
320-81058-8	PW-200	Water	10/25/21 13:20	10/29/21 15:04

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# CHAIN-OF-CUSTODY RECORD

Laboratory Test America Page 1 of 1  
 Attn: David Pfeuffer

Analytical Methods (include preservative if used)

Quote No: \_\_\_\_\_  
 J-Flags:  Yes  No

Turn Around Time:  Normal  Rush  
 Please Specify \_\_\_\_\_

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PW-200-sink		1240	10/25/21	X	2 ground water + Triting (ON HOLD)
PW-200-F Port		1245		X	(ON HOLD)
PW-200-Unit 1-C Port		1251		X	(ON HOLD)
PW-200-Unit 2-C Port		1252		X	(ON HOLD)
PW-200-Unit 3-C Port		1253		X	(ON HOLD)
PW-200-Unit 4-C Port		1254		X	(ON HOLD)
PW-200-C Port Composite		1312		X	
PW-200		1320		X	



**Project Information**  
 Number: 101543-001  
 Name: GST Risk  
 Contact: Kristen  
 Ongoing Project? Yes  No   
 Sampler: VTY

**Sample Receipt**  
 Total No. of Containers: 16  
 COC Seals/Intact? Y/N/NA  
 Received Good Cond./Cold  
 Temp:  
 Delivery Method: goods/break

**Notes:**  
 5 Samples: PW-200-F Port + Unit 1-C Port + Unit 2-C Port + Unit 3-C Port + Unit 4-C Port; are on hold. Contact KRF after results of other 3.

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: _____ Printed Name: <u>Veselina Yakimova</u> Company: <u>Shannon &amp; Wilson</u>	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____
Time: <u>10/25/21</u> Date: <u>10/28</u>	Time: _____ Date: _____	Time: _____ Date: _____
Received By: 1. Signature: _____ Printed Name: <u>Sabir Singh</u> Company: _____	Received By: 2. Signature: _____ Printed Name: _____ Company: _____	Received By: 3. Signature: _____ Printed Name: _____ Company: _____
Time: <u>10/25/21</u> Date: <u>10/28</u>	Time: _____ Date: _____	Time: _____ Date: _____



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-81058-1

**Login Number: 81058**

**List Number: 1**

**Creator: Cahill, Nicholas P**

**List Source: Eurofins TestAmerica, Sacramento**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Laboratory Data Review Checklist

Completed By:

Justin Risley

Title:

Engineering Staff

Date:

November 15, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-81058-1

Laboratory Report Date:

11/12/2021

CS Site Name:

DRM Gustavus Airport Statewide PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

Laboratory Report Date:

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

Analyses were performed by the Eurofins Laboratory in West Sacramento, CA. The laboratory is approved by the DEC CS program and certified under the Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP) for the requested analyses.

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

The requested analyses were conducted by TestAmerica of West Sacramento, CA.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

The sample receipt form notes the sampler’s name is not listed on the COC; however, it is listed in the “sampler” section. The COC was complete for this project and the results are unaffected.

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

Samples do not require preservation other than temperature.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form notes that the samples were received in good condition.

Laboratory Report Date:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes  No  N/A  Comments:

See above.

- e. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

#### 4. Case Narrative

- a. Present and understandable?

Yes  No  N/A  Comments:

- b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

The case narrative indicates the following:

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-540170.

Method 3535: The following sample was yellow and contained floating particulates in the sample bottle prior to extraction: PW-200.

Method 3535: The following samples were preserved with trizma: PW-200-sink, PW-200-C Port Composite and PW-200. Thus, the MB, LCS and LCSD also contain trizma.

- c. Were all corrective actions documented?

Yes  No  N/A  Comments:

See above.

- d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not note an effect on data quality or usability. See the following sections for our assessment.

Laboratory Report Date:

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

--

b. All applicable holding times met?

Yes  No  N/A  Comments:

--

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

The reporting limit (RL) is less than the applicable DEC regulatory limit for the project.

e. Data quality or usability affected?

The data quality and/or usability was not affected; see above.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

--

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

There were no detections in the method blank sample associated with these project samples.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

Laboratory Report Date:

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A  Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.



Laboratory Report Date:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

A MS/MSD was not analyzed with this work order; however, the laboratory analyzed LCS and LCSD samples to assess laboratory accuracy and precision.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; MS and MSD samples were not analyzed for this work order.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

Laboratory Report Date:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes  No  N/A  Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A  Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

iv. Data quality or usability affected?

Comments:

The data quality and/or usability was affected; see above.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes  No  N/A  Comments:

PFAS are not volatile compounds. A trip blank is not required for the requested analysis.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

Laboratory Report Date:

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; a trip blank is not required for the requested analysis.

v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

Field duplicate pairs are not required for this project.

ii. Submitted blind to lab?

Yes  No  N/A  Comments:

See above.

iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration $R_2$  = Field Duplicate ConcentrationYes  No  N/A  Comments:

See above.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and/or usability was not affected; see above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

Reusable equipment was not used in the sampling procedure; therefore, an equipment blank is unnecessary.

i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

Laboratory Report Date:

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

iii. Data quality or usability affected?

Comments:

No; see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A

Comments:

## ANALYTICAL REPORT

Eurofins Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

Laboratory Job ID: 320-84756-1  
Client Project/Site: PFAS  
Revision: 1

For:  
Shannon & Wilson, Inc  
2355 Hill Rd.  
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger



---

Authorized for release by:  
3/7/2022 10:49:06 AM

David Alltucker, Project Manager I  
(916)374-4383  
[David.Alltucker@Eurofinset.com](mailto:David.Alltucker@Eurofinset.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:

[www.eurofinsus.com/Env](http://www.eurofinsus.com/Env)

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*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: PFAS

Job ID: 320-84756-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: PFAS

Job ID: 320-84756-1

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**Job ID: 320-84756-1**

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**Laboratory: Eurofins Sacramento**

**Narrative**

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**Job Narrative  
320-84756-1**

Revision 3-7-2022: This report has been revised to include completed checklist.

**Receipt**

The samples were received on 2/12/2022 10:54 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.8° C.

**LCMS**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

**Organic Prep**

Method 537.1 DW: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-566488.

Method 537.1 DW: The following sample is yellow and contain a thin layer of sediment at the bottom of the bottle prior to extraction: PW-200 (320-84756-8).

Method 537.1 DW: The following sample is yellow after final voluming: PW-200 (320-84756-8).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.





# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: PFAS

Job ID: 320-84756-1

**Client Sample ID: PW-200-Sink**

**Lab Sample ID: 320-84756-1**

No Detections.

**Client Sample ID: PW-200-C Port Composite**

**Lab Sample ID: 320-84756-3**

No Detections.

**Client Sample ID: PW-200**

**Lab Sample ID: 320-84756-8**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	5.0		1.8	0.45	ng/L	1		537.1 DW	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.3		1.8	0.45	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	1.0	J	1.8	0.45	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.8		1.8	0.45	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	62		1.8	0.45	ng/L	1		537.1 DW	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: PFAS

Job ID: 320-84756-1

**Client Sample ID: PW-200-Sink**

**Lab Sample ID: 320-84756-1**

**Date Collected: 02/08/22 13:18**

**Matrix: Water**

**Date Received: 02/12/22 10:54**

**Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:05	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:05	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:05	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:05	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:05	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:05	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:05	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:05	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:05	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:05	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:05	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	75		70 - 130	02/16/22 19:35	02/28/22 21:05	1
13C2 PFDA	88		70 - 130	02/16/22 19:35	02/28/22 21:05	1
d5-NEtFOSAA	89		70 - 130	02/16/22 19:35	02/28/22 21:05	1
13C3 HFPO-DA	76		70 - 130	02/16/22 19:35	02/28/22 21:05	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: PFAS

Job ID: 320-84756-1

**Client Sample ID: PW-200-C Port Composite**

**Lab Sample ID: 320-84756-3**

**Date Collected: 02/08/22 13:53**

**Matrix: Water**

**Date Received: 02/12/22 10:54**

**Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.44	ng/L		02/16/22 19:35	02/28/22 21:13	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.44	ng/L		02/16/22 19:35	02/28/22 21:13	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.44	ng/L		02/16/22 19:35	02/28/22 21:13	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.44	ng/L		02/16/22 19:35	02/28/22 21:13	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.44	ng/L		02/16/22 19:35	02/28/22 21:13	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.44	ng/L		02/16/22 19:35	02/28/22 21:13	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.44	ng/L		02/16/22 19:35	02/28/22 21:13	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	0.44	ng/L		02/16/22 19:35	02/28/22 21:13	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.44	ng/L		02/16/22 19:35	02/28/22 21:13	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.44	ng/L		02/16/22 19:35	02/28/22 21:13	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.44	ng/L		02/16/22 19:35	02/28/22 21:13	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.44	ng/L		02/16/22 19:35	02/28/22 21:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.7	0.44	ng/L		02/16/22 19:35	02/28/22 21:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.7	0.44	ng/L		02/16/22 19:35	02/28/22 21:13	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O)	ND		1.7	0.44	ng/L		02/16/22 19:35	02/28/22 21:13	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF)	ND		1.7	0.44	ng/L		02/16/22 19:35	02/28/22 21:13	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.7	0.44	ng/L		02/16/22 19:35	02/28/22 21:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.44	ng/L		02/16/22 19:35	02/28/22 21:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	82		70 - 130	02/16/22 19:35	02/28/22 21:13	1
13C2 PFDA	95		70 - 130	02/16/22 19:35	02/28/22 21:13	1
d5-NEtFOSAA	99		70 - 130	02/16/22 19:35	02/28/22 21:13	1
13C3 HFPO-DA	81		70 - 130	02/16/22 19:35	02/28/22 21:13	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: PFAS

Job ID: 320-84756-1

**Client Sample ID: PW-200**

**Lab Sample ID: 320-84756-8**

**Date Collected: 02/08/22 14:00**

**Matrix: Water**

**Date Received: 02/12/22 10:54**

**Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	5.0		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:20	1
Perfluoroheptanoic acid (PFHpA)	2.3		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:20	1
Perfluorooctanoic acid (PFOA)	1.0	J	1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:20	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:20	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:20	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:20	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:20	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:20	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:20	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:20	1
Perfluorohexanesulfonic acid (PFHxS)	8.8		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:20	1
Perfluorooctanesulfonic acid (PFOS)	62		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:20	1
N-methylperfluorooctanesulfonamideacetic acid (NMeFOSAA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:20	1
N-ethylperfluorooctanesulfonamideacetic acid (NEtFOSAA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:20	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:20	1
11-Chloroeicosafluoro-3-oxadecane-1-sulfonic acid (11Cl-PF)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:20	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.45	ng/L		02/16/22 19:35	02/28/22 21:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	82		70 - 130	02/16/22 19:35	02/28/22 21:20	1
13C2 PFDA	101		70 - 130	02/16/22 19:35	02/28/22 21:20	1
d5-NEtFOSAA	96		70 - 130	02/16/22 19:35	02/28/22 21:20	1
13C3 HFPO-DA	80		70 - 130	02/16/22 19:35	02/28/22 21:20	1

# Surrogate Summary

Client: Shannon & Wilson, Inc  
Project/Site: PFAS

Job ID: 320-84756-1

**Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)**

**Matrix: Water**

**Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		PFHxA (70-130)	PFDA (70-130)	d5NEFOS (70-130)	HFPODA (70-130)
320-84756-1	PW-200-Sink	75	88	89	76
320-84756-3	PW-200-C Port Composite	82	95	99	81
320-84756-8	PW-200	82	101	96	80
LCS 320-566488/2-A	Lab Control Sample	84	93	93	81
LCSD 320-566488/3-A	Lab Control Sample Dup	79	87	91	78
MB 320-566488/1-A	Method Blank	80	88	89	79

### Surrogate Legend

PFHxA = 13C2 PFHxA

PFDA = 13C2 PFDA

d5NEFOS = d5-NEtFOSAA

HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: PFAS

Job ID: 320-84756-1

## Method: 537.1 DW - Per fluor irated Alkyl Acids ( LC/MS)

**Lab Sample I D: MB320-56648/ 1-A**  
**Matrix: Water**  
**Analysis Batch: 569158**

**Client Sample I D: Method Blank**  
**Pr ep Type: Total/ NA**  
**Pr ep Batch: 566488**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.50	ng/L		02/16/22 19:35	02/28/22 19:34	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.50	ng/L		02/16/22 19:35	02/28/22 19:34	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.50	ng/L		02/16/22 19:35	02/28/22 19:34	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.50	ng/L		02/16/22 19:35	02/28/22 19:34	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.50	ng/L		02/16/22 19:35	02/28/22 19:34	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.50	ng/L		02/16/22 19:35	02/28/22 19:34	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.50	ng/L		02/16/22 19:35	02/28/22 19:34	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	0.50	ng/L		02/16/22 19:35	02/28/22 19:34	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.50	ng/L		02/16/22 19:35	02/28/22 19:34	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.50	ng/L		02/16/22 19:35	02/28/22 19:34	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.50	ng/L		02/16/22 19:35	02/28/22 19:34	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.50	ng/L		02/16/22 19:35	02/28/22 19:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.50	ng/L		02/16/22 19:35	02/28/22 19:34	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.50	ng/L		02/16/22 19:35	02/28/22 19:34	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O)	ND		2.0	0.50	ng/L		02/16/22 19:35	02/28/22 19:34	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF)	ND		2.0	0.50	ng/L		02/16/22 19:35	02/28/22 19:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.0	0.50	ng/L		02/16/22 19:35	02/28/22 19:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.50	ng/L		02/16/22 19:35	02/28/22 19:34	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	80		70 - 130	02/16/22 19:35	02/28/22 19:34	1
13C2 PFDA	88		70 - 130	02/16/22 19:35	02/28/22 19:34	1
d5-NEtFOSAA	89		70 - 130	02/16/22 19:35	02/28/22 19:34	1
13C3 HFPO-DA	79		70 - 130	02/16/22 19:35	02/28/22 19:34	1

**Lab Sample I D: LCS 320-5664882-A**  
**Matrix: Water**  
**Analysis Batch: 569158**

**Client Sample I D: Lab Contr ol Sample**  
**Pr ep Type: Total/ NA**  
**Pr ep Batch: 566488**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
							Limits
Perfluorohexanoic acid (PFHxA)	80.0	64.1		ng/L		80	70 - 130
Perfluoroheptanoic acid (PFHpA)	80.0	71.9		ng/L		90	70 - 130
Perfluorooctanoic acid (PFOA)	80.0	83.6		ng/L		105	70 - 130
Perfluorononanoic acid (PFNA)	80.0	75.4		ng/L		94	70 - 130
Perfluorodecanoic acid (PFDA)	80.0	75.7		ng/L		95	70 - 130
Perfluoroundecanoic acid (PFUnA)	80.0	66.0		ng/L		83	70 - 130
Perfluorododecanoic acid (PFDoA)	80.0	65.9		ng/L		82	70 - 130
Perfluorotridecanoic acid (PFTriA)	80.0	68.8		ng/L		86	70 - 130
Perfluorotetradecanoic acid (PFTeA)	80.0	63.2		ng/L		79	70 - 130
Perfluorobutanesulfonic acid (PFBS)	70.7	55.2		ng/L		78	70 - 130

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: PFAS

Job ID: 320-84756-1

## Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

**Lab Sample I D: LCS 320-5664882-A**  
**Matrix: Water**  
**Analysis Batch: 569158**

**Client Sample I D: Lab Contr of Sample**  
**Prep Type: Total/ NA**  
**Prep Batch: 566488**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
							Lower	Upper	
Perfluorohexanesulfonic acid (PFHxS)	72.8	75.0		ng/L		103	70 - 130		
Perfluorooctanesulfonic acid (PFOS)	74.2	71.2		ng/L		96	70 - 130		
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	80.0	72.5		ng/L		91	70 - 130		
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	80.0	74.2		ng/L		93	70 - 130		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O)	74.6	75.9		ng/L		102	70 - 130		
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PFHexafluoropropylene Oxide Dimer Acid (HFPO-DA)	75.4	63.5		ng/L		84	70 - 130		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	75.4	60.7		ng/L		80	70 - 130		
		<b>LCS LCS</b>							
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>						
13C2 PFHxA	84		70 - 130						
13C2 PFDA	93		70 - 130						
d5-NEtFOSAA	93		70 - 130						
13C3 HFPO-DA	81		70 - 130						

**Lab Sample I D: LCSD 320-566488/3-A**  
**Matrix: Water**  
**Analysis Batch: 569158**

**Client Sample I D: Lab Contr of Sample Dup**  
**Prep Type: Total/ NA**  
**Prep Batch: 566488**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits		RPD	
							Lower	Upper	RPD	Limit
Perfluorohexanoic acid (PFHxA)	80.0	67.6		ng/L		84	70 - 130	5	30	
Perfluoroheptanoic acid (PFHpA)	80.0	68.4		ng/L		86	70 - 130	5	30	
Perfluorooctanoic acid (PFOA)	80.0	79.4		ng/L		99	70 - 130	5	30	
Perfluorononanoic acid (PFNA)	80.0	78.0		ng/L		98	70 - 130	3	30	
Perfluorodecanoic acid (PFDA)	80.0	73.7		ng/L		92	70 - 130	3	30	
Perfluoroundecanoic acid (PFUnA)	80.0	72.0		ng/L		90	70 - 130	9	30	
Perfluorododecanoic acid (PFDoA)	80.0	70.0		ng/L		88	70 - 130	6	30	
Perfluorotridecanoic acid (PFTriA)	80.0	67.9		ng/L		85	70 - 130	1	30	
Perfluorotetradecanoic acid (PFTeA)	80.0	59.3		ng/L		74	70 - 130	6	30	
Perfluorobutanesulfonic acid (PFBS)	70.7	60.1		ng/L		85	70 - 130	9	30	
Perfluorohexanesulfonic acid (PFHxS)	72.8	78.4		ng/L		108	70 - 130	4	30	
Perfluorooctanesulfonic acid (PFOS)	74.2	72.5		ng/L		98	70 - 130	2	30	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	80.0	75.3		ng/L		94	70 - 130	4	30	
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	80.0	76.4		ng/L		95	70 - 130	3	30	
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O)	74.6	82.6		ng/L		111	70 - 130	8	30	

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# QC Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: PFAS

Job ID: 320-84756-1

## Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

**Lab Sample I D: LCSD320-566488/3-A**  
**Matrix: Water**  
**Analysis Batch: 569158**

**Client Sample I D: Lab Control of Sample Dup**  
**Prep Type: Total/ NA**  
**Prep Batch: 566488**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF)	75.4	66.6		ng/L		88	70 - 130	5	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	80.0	62.4		ng/L		78	70 - 130	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	75.4	62.8		ng/L		83	70 - 130	4	30

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C2 PFHxA	79		70 - 130
13C2 PFDA	87		70 - 130
d5-NEtFOSAA	91		70 - 130
13C3 HFPO-DA	78		70 - 130



# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: PFAS

Job ID: 320-84756-1

## LCMS

### Prep Batch: 566488

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-84756-1	PW-200-Sink	Total/NA	Water	537.1 DW	
320-84756-3	PW-200-C Port Composite	Total/NA	Water	537.1 DW	
320-84756-8	PW-200	Total/NA	Water	537.1 DW	
MB 320-566488/1-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 320-566488/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	
LCSD 320-566488/3-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	

### Analysis Batch: 569158

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-566488/1-A	Method Blank	Total/NA	Water	537.1 DW	566488
LCS 320-566488/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	566488
LCSD 320-566488/3-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	566488

### Analysis Batch: 569160

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-84756-1	PW-200-Sink	Total/NA	Water	537.1 DW	566488
320-84756-3	PW-200-C Port Composite	Total/NA	Water	537.1 DW	566488
320-84756-8	PW-200	Total/NA	Water	537.1 DW	566488

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: PFAS

Job ID: 320-84756-1

**Client Sample ID: PW-200-Sink**

**Lab Sample ID: 320-84756-1**

Date Collected: 02/08/22 13:18

Matrix: Water

Date Received: 02/12/22 10:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537.1 DW			278.6 mL	1.0 mL	566488	02/16/22 19:35	PV	TAL SAC
Total/NA	Analysis	537.1 DW		1			569160	02/28/22 21:05	D1R	TAL SAC

**Client Sample ID: PW-200-C Port Composite**

**Lab Sample ID: 320-84756-3**

Date Collected: 02/08/22 13:53

Matrix: Water

Date Received: 02/12/22 10:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537.1 DW			287.1 mL	1.0 mL	566488	02/16/22 19:35	PV	TAL SAC
Total/NA	Analysis	537.1 DW		1			569160	02/28/22 21:13	D1R	TAL SAC

**Client Sample ID: PW-200**

**Lab Sample ID: 320-84756-8**

Date Collected: 02/08/22 14:00

Matrix: Water

Date Received: 02/12/22 10:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537.1 DW			278.2 mL	1.0 mL	566488	02/16/22 19:35	PV	TAL SAC
Total/NA	Analysis	537.1 DW		1			569160	02/28/22 21:20	D1R	TAL SAC

**Laboratory References:**

TAL SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
 Project/Site: PFAS

Job ID: 320-84756-1

## Laboratory: Eurofins Sacramento

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
537.1 DW	537.1 DW	Water	11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF)
537.1 DW	537.1 DW	Water	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
537.1 DW	537.1 DW	Water	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O)
537.1 DW	537.1 DW	Water	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)
537.1 DW	537.1 DW	Water	N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)
537.1 DW	537.1 DW	Water	N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)
537.1 DW	537.1 DW	Water	Perfluorobutanesulfonic acid (PFBS)
537.1 DW	537.1 DW	Water	Perfluorodecanoic acid (PFDA)
537.1 DW	537.1 DW	Water	Perfluorododecanoic acid (PFDoA)
537.1 DW	537.1 DW	Water	Perfluoroheptanoic acid (PFHpA)
537.1 DW	537.1 DW	Water	Perfluorohexanesulfonic acid (PFHxS)
537.1 DW	537.1 DW	Water	Perfluorohexanoic acid (PFHxA)
537.1 DW	537.1 DW	Water	Perfluorononanoic acid (PFNA)
537.1 DW	537.1 DW	Water	Perfluorooctanesulfonic acid (PFOS)
537.1 DW	537.1 DW	Water	Perfluorooctanoic acid (PFOA)
537.1 DW	537.1 DW	Water	Perfluorotetradecanoic acid (PFTeA)
537.1 DW	537.1 DW	Water	Perfluorotridecanoic acid (PFTriA)
537.1 DW	537.1 DW	Water	Perfluoroundecanoic acid (PFUnA)

# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: PFAS

Job ID: 320-84756-1

Method	Method Description	Protocol	Laboratory
537.1 DW	Perfluorinated Alkyl Acids (LC/MS)	EPA	TAL SAC
537.1 DW	Extraction of Perfluorinated Alkyl Acids	EPA	TAL SAC

**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

TAL SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: PFAS

Job ID: 320-84756-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-84756-1	PW-200-Sink	Water	02/08/22 13:18	02/12/22 10:54
320-84756-3	PW-200-C Port Composite	Water	02/08/22 13:53	02/12/22 10:54
320-84756-8	PW-200	Water	02/08/22 14:00	02/12/22 10:54

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# CHAIN-OF-CUSTODY RECORD

Analytical Methods (include preservative if used)

Quote No: \_\_\_\_\_

Turn Around Time:  Normal  Rush

J-Flags:  Yes  No

Please Specify \_\_\_\_\_

PTAs X18	
Total Number of Containers	

Remarks/Matrix Composition/Grab? Sample Containers

Sample Identity	Lab No.	Time	Date Sampled		Remarks/Matrix Composition/Grab? Sample Containers
PW-200-Sink		1318	2/8/22	X	Grandwater as drinking water
Hold * PW-200-F Port * Hold *		1328		X	
PW-200-C Port Composite		1353		X	
Hold * PW-200-Unit 1-C Port * Hold *		1338		X	
Hold * PW-200-Unit 2-C Port * Hold *		1342		X	
PW-200-Unit 3-C Port * Hold *		1345		X	
Hold * PW-200-Unit 4-C Port * Hold *		1348		X	
PW-200		1400		X	



Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Number: <u>101543-001</u>	Total No. of Containers: _____	Signature: _____	Signature: _____	Signature: _____
Name: <u>Gustavus POE</u>	COC Seals/Intact? <u>Y/N/A</u>	Printed Name: _____	Printed Name: _____	Printed Name: _____
Contact: <u>KRF</u>	Received Good Cond./Cold _____	Date: <u>2/11/22</u>	Date: _____	Date: _____
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Temp: <u>1-8</u>	Company: <u>A. Masters</u>	Company: _____	Company: _____
Sampler: <u>ARM</u>	Delivery Method: <u>Fieldtrak</u>	Company: <u>Shannon &amp; Wilson, Inc.</u>	Company: _____	Company: _____
<b>Notes:</b>		<b>Received By: 1.</b>	<b>Received By: 2.</b>	<b>Received By: 3.</b>
		Signature: _____	Signature: _____	Signature: _____
		Printed Name: <u>David He</u>	Printed Name: _____	Printed Name: _____
		Date: <u>2/11/22</u>	Date: _____	Date: _____
		Company: _____	Company: _____	Company: _____

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-84756-1

**Login Number: 84756**

**List Source: Eurofins Sacramento**

**List Number: 1**

**Creator: Her, David A**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1091842, 1519406
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	Gel Packs
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Laboratory Data Review Checklist

Completed By:

Amber Masters

Title:

Environmental Scientist

Date:

March 7, 2022

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-84756-1 Rev(1)

Laboratory Report Date:

March 7, 2022

CS Site Name:

DRM Gustavus Airport Statewide PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904



Laboratory Report Date:

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

Analyses were performed by the Eurofins Laboratory in West Sacramento, CA. The laboratory is approved by the DEC CS program and certified under the Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP) for the requested analyses.

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

The requested analyses were conducted by Eurofins Environment Testing America of West Sacramento, CA.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

Samples do not require preservation other than temperature.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form notes that the samples were received in good condition.

Laboratory Report Date:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes  No  N/A  Comments:

See above.

- e. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

#### 4. Case Narrative

- a. Present and understandable?

Yes  No  N/A  Comments:

- b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

The case narrative indicates the following:

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-566488.

The following sample was yellow and contained a thin layer of sediment in the sample bottle prior to extraction: PW-200.

Sample *PW-200* was yellow after final voluming.

- c. Were all corrective actions documented?

Yes  No  N/A  Comments:

See above.

- d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not note an effect on data quality or usability. See the following sections for our assessment.

Laboratory Report Date:

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

The reporting limit (RL) is less than the applicable DEC regulatory limit for the project.

e. Data quality or usability affected?

The data quality and/or usability was not affected; see above.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

There were no detections in the method blank sample associated with these project samples.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

Laboratory Report Date:

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A  Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

Laboratory Report Date:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

A MS/MSD was not analyzed with this work order; however, the laboratory analyzed LCS and LCSD samples to assess laboratory accuracy and precision.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; MS and MSD samples were not analyzed for this work order.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

Laboratory Report Date:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes  No  N/A  Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A  Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

iv. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes  No  N/A  Comments:

PFAS are not volatile compounds. A trip blank is not required for the requested analysis.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

Laboratory Report Date:

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; a trip blank is not required for the requested analysis.

v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

Field duplicates are not required for this project.

ii. Submitted blind to lab?

Yes  No  N/A  Comments:

See above.

iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration $R_2$  = Field Duplicate ConcentrationYes  No  N/A  Comments:

See above.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and/or usability was not affected; see above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

Reusable equipment was not used in the sampling procedure; therefore, an equipment blank is unnecessary.

i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

Laboratory Report Date:

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

iii. Data quality or usability affected?

Comments:

No; see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A

Comments:



## ANALYTICAL REPORT

Eurofins Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

Laboratory Job ID: 320-87436-1  
Client Project/Site: GUS INN POE

For:  
Shannon & Wilson, Inc  
2355 Hill Rd.  
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger



---

Authorized for release by:  
5/17/2022 12:49:00 PM

David Alltucker, Project Manager I  
(916)374-4383  
[David.Alltucker@et.eurofinsus.com](mailto:David.Alltucker@et.eurofinsus.com)

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: GUS INN POE

Job ID: 320-87436-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: GUS INN POE

Job ID: 320-87436-1

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**Job ID: 320-87436-1**

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**Laboratory: Eurofins Sacramento**

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**Narrative**

**Job Narrative**  
**320-87436-1**

**Receipt**

The samples were received on 5/3/2022 3:30 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.5° C.

**LCMS**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

**Organic Prep**

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-586386.

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-586797.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: GUS INN POE

Job ID: 320-87436-1

## Client Sample ID: PW-200-C Port Composite

Lab Sample ID: 320-87436-5

No Detections.

## Client Sample ID: PW-200

Lab Sample ID: 320-87436-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	3.7		1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.6	J	1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	0.79	J	1.8	0.77	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.3		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	39		1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-200-Sink

Lab Sample ID: 320-87436-8

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS INN POE

Job ID: 320-87436-1

**Client Sample ID: PW-200-C Part Composite**

**Lab Sample ID: 320-87436-5**

Date Collected 04/ 27/ 22 13:23

Matrix: Water

Date Received 05/ 03/ 22 15 :30

**Method EPA 5 37(Mtd) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.50	ng/L		05/09/22 12:26	05/17/22 01:22	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		05/09/22 12:26	05/17/22 01:22	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		05/09/22 12:26	05/17/22 01:22	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		05/09/22 12:26	05/17/22 01:22	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		05/09/22 12:26	05/17/22 01:22	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		05/09/22 12:26	05/17/22 01:22	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		05/09/22 12:26	05/17/22 01:22	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		05/09/22 12:26	05/17/22 01:22	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		05/09/22 12:26	05/17/22 01:22	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		05/09/22 12:26	05/17/22 01:22	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.49	ng/L		05/09/22 12:26	05/17/22 01:22	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47	ng/L		05/09/22 12:26	05/17/22 01:22	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		05/09/22 12:26	05/17/22 01:22	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		05/09/22 12:26	05/17/22 01:22	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		05/09/22 12:26	05/17/22 01:22	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		05/09/22 12:26	05/17/22 01:22	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		05/09/22 12:26	05/17/22 01:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		05/09/22 12:26	05/17/22 01:22	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		50 - 150	05/09/22 12:26	05/17/22 01:22	1
13C4 PFHpA	98		50 - 150	05/09/22 12:26	05/17/22 01:22	1
13C4 PFOA	98		50 - 150	05/09/22 12:26	05/17/22 01:22	1
13C5 PFNA	95		50 - 150	05/09/22 12:26	05/17/22 01:22	1
13C2 PFDA	96		50 - 150	05/09/22 12:26	05/17/22 01:22	1
13C2 PFUnA	102		50 - 150	05/09/22 12:26	05/17/22 01:22	1
13C2 PFDoA	97		50 - 150	05/09/22 12:26	05/17/22 01:22	1
13C2 PFTeDA	99		50 - 150	05/09/22 12:26	05/17/22 01:22	1
13C3 PFBS	99		50 - 150	05/09/22 12:26	05/17/22 01:22	1
18O2 PFHxS	104		50 - 150	05/09/22 12:26	05/17/22 01:22	1
13C4 PFOS	95		50 - 150	05/09/22 12:26	05/17/22 01:22	1
d3-NMeFOSAA	98		50 - 150	05/09/22 12:26	05/17/22 01:22	1
d5-NEtFOSAA	103		50 - 150	05/09/22 12:26	05/17/22 01:22	1
13C3 HFPO-DA	102		50 - 150	05/09/22 12:26	05/17/22 01:22	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS INN POE

Job ID: 320-87436-1

**Client Sample ID: PW-200**  
Date Collected 04/ 27/ 22 13:28  
Date Received 05/ 03/ 22 15 :30

**Lab Sample ID: 320-87436-6**  
Matrix: Water

**Method EPA 5 37(Mtd) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	3.7		1.8	0.53	ng/L		05/09/22 12:26	05/17/22 01:32	1
Perfluoroheptanoic acid (PFHpA)	1.6	J	1.8	0.23	ng/L		05/09/22 12:26	05/17/22 01:32	1
Perfluorooctanoic acid (PFOA)	0.79	J	1.8	0.77	ng/L		05/09/22 12:26	05/17/22 01:32	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		05/09/22 12:26	05/17/22 01:32	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		05/09/22 12:26	05/17/22 01:32	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		05/09/22 12:26	05/17/22 01:32	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		05/09/22 12:26	05/17/22 01:32	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		05/09/22 12:26	05/17/22 01:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		05/09/22 12:26	05/17/22 01:32	1
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.8	0.18	ng/L		05/09/22 12:26	05/17/22 01:32	1
Perfluorohexanesulfonic acid (PFHxS)	5.3		1.8	0.52	ng/L		05/09/22 12:26	05/17/22 01:32	1
Perfluorooctanesulfonic acid (PFOS)	39		1.8	0.49	ng/L		05/09/22 12:26	05/17/22 01:32	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		05/09/22 12:26	05/17/22 01:32	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		05/09/22 12:26	05/17/22 01:32	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		05/09/22 12:26	05/17/22 01:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		05/09/22 12:26	05/17/22 01:32	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		05/09/22 12:26	05/17/22 01:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		05/09/22 12:26	05/17/22 01:32	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C2 PFHxA	74		50 - 150				05/09/22 12:26	05/17/22 01:32	1
13C4 PFHpA	79		50 - 150				05/09/22 12:26	05/17/22 01:32	1
13C4 PFOA	71		50 - 150				05/09/22 12:26	05/17/22 01:32	1
13C5 PFNA	75		50 - 150				05/09/22 12:26	05/17/22 01:32	1
13C2 PFDA	79		50 - 150				05/09/22 12:26	05/17/22 01:32	1
13C2 PFUnA	82		50 - 150				05/09/22 12:26	05/17/22 01:32	1
13C2 PFDoA	76		50 - 150				05/09/22 12:26	05/17/22 01:32	1
13C2 PFTeDA	71		50 - 150				05/09/22 12:26	05/17/22 01:32	1
13C3 PFBS	75		50 - 150				05/09/22 12:26	05/17/22 01:32	1
18O2 PFHxS	74		50 - 150				05/09/22 12:26	05/17/22 01:32	1
13C4 PFOS	70		50 - 150				05/09/22 12:26	05/17/22 01:32	1
d3-NMeFOSAA	73		50 - 150				05/09/22 12:26	05/17/22 01:32	1
d5-NEtFOSAA	75		50 - 150				05/09/22 12:26	05/17/22 01:32	1
13C3 HFPO-DA	76		50 - 150				05/09/22 12:26	05/17/22 01:32	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS INN POE

Job ID: 320-87436-1

**Client Sample ID: PW-200-Sink**

**Lab Sample ID: 320-87436-8**

Date Collected 04/ 27/ 22 12:36

Matrix: Water

Date Received 05/ 03/ 22 15 :30

**Method EPA 5 37(Mtd) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		05/11/22 05:23	05/14/22 04:25	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		05/11/22 05:23	05/14/22 04:25	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		05/11/22 05:23	05/14/22 04:25	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		05/11/22 05:23	05/14/22 04:25	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		05/11/22 05:23	05/14/22 04:25	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		05/11/22 05:23	05/14/22 04:25	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		05/11/22 05:23	05/14/22 04:25	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		05/11/22 05:23	05/14/22 04:25	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		05/11/22 05:23	05/14/22 04:25	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		05/11/22 05:23	05/14/22 04:25	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		05/11/22 05:23	05/14/22 04:25	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		05/11/22 05:23	05/14/22 04:25	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		05/11/22 05:23	05/14/22 04:25	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		05/11/22 05:23	05/14/22 04:25	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		05/11/22 05:23	05/14/22 04:25	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		05/11/22 05:23	05/14/22 04:25	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		05/11/22 05:23	05/14/22 04:25	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		05/11/22 05:23	05/14/22 04:25	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		50 - 150	05/11/22 05:23	05/14/22 04:25	1
13C4 PFHpA	99		50 - 150	05/11/22 05:23	05/14/22 04:25	1
13C4 PFOA	95		50 - 150	05/11/22 05:23	05/14/22 04:25	1
13C5 PFNA	99		50 - 150	05/11/22 05:23	05/14/22 04:25	1
13C2 PFDA	94		50 - 150	05/11/22 05:23	05/14/22 04:25	1
13C2 PFUnA	91		50 - 150	05/11/22 05:23	05/14/22 04:25	1
13C2 PFDoA	97		50 - 150	05/11/22 05:23	05/14/22 04:25	1
13C2 PFTeDA	88		50 - 150	05/11/22 05:23	05/14/22 04:25	1
13C3 PFBS	103		50 - 150	05/11/22 05:23	05/14/22 04:25	1
18O2 PFHxS	100		50 - 150	05/11/22 05:23	05/14/22 04:25	1
13C4 PFOS	90		50 - 150	05/11/22 05:23	05/14/22 04:25	1
d3-NMeFOSAA	94		50 - 150	05/11/22 05:23	05/14/22 04:25	1
d5-NEtFOSAA	101		50 - 150	05/11/22 05:23	05/14/22 04:25	1
13C3 HFPO-DA	96		50 - 150	05/11/22 05:23	05/14/22 04:25	1



# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: GUS INN POE

Job ID: 320-87436-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDaA (50-150)	PFTDA (50-150)
320-87436-5	PW-200-C Port Composite	101	98	98	95	96	102	97	99
320-87436-6	PW-200	74	79	71	75	79	82	76	71
320-87436-8	PW-200-Sink	95	99	95	99	94	91	97	88
LCS 320-586386/2-A	Lab Control Sample	50	55	55	55	58	59	55	60
LCS 320-586797/2-A	Lab Control Sample	92	95	93	90	92	85	89	83
LCSD 320-586386/3-A	Lab Control Sample Dup	84	85	81	83	80	96	81	82
LCSD 320-586797/3-A	Lab Control Sample Dup	81	82	83	79	83	79	78	78
MB 320-586386/1-A	Method Blank	76	80	85	82	73	77	72	62
MB 320-586797/1-A	Method Blank	92	94	94	92	91	91	88	85

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-87436-5	PW-200-C Port Composite	99	104	95	98	103	102
320-87436-6	PW-200	75	74	70	73	75	76
320-87436-8	PW-200-Sink	103	100	90	94	101	96
LCS 320-586386/2-A	Lab Control Sample	59	58	55	58	66	57
LCS 320-586797/2-A	Lab Control Sample	96	95	88	85	85	89
LCSD 320-586386/3-A	Lab Control Sample Dup	89	85	78	90	90	86
LCSD 320-586797/3-A	Lab Control Sample Dup	85	85	74	79	77	79
MB 320-586386/1-A	Method Blank	82	73	72	74	82	80
MB 320-586797/1-A	Method Blank	101	97	90	86	91	99

#### Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS INN POE

Job ID: 320-87436-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-586386/ 1-A**  
**Matrix Water**  
**Analysis Batch: 588074**

**Client Sample ID: Method Blank**  
**Prep Type: Total/ NA**  
**Prep Batch: 586386**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		05/09/22 12:26	05/16/22 22:30	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		05/09/22 12:26	05/16/22 22:30	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		05/09/22 12:26	05/16/22 22:30	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		05/09/22 12:26	05/16/22 22:30	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		05/09/22 12:26	05/16/22 22:30	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		05/09/22 12:26	05/16/22 22:30	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		05/09/22 12:26	05/16/22 22:30	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		05/09/22 12:26	05/16/22 22:30	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		05/09/22 12:26	05/16/22 22:30	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		05/09/22 12:26	05/16/22 22:30	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		05/09/22 12:26	05/16/22 22:30	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		05/09/22 12:26	05/16/22 22:30	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		05/09/22 12:26	05/16/22 22:30	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		05/09/22 12:26	05/16/22 22:30	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		05/09/22 12:26	05/16/22 22:30	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		05/09/22 12:26	05/16/22 22:30	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		05/09/22 12:26	05/16/22 22:30	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		05/09/22 12:26	05/16/22 22:30	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	76		50 - 150	05/09/22 12:26	05/16/22 22:30	1
13C4 PFHpA	80		50 - 150	05/09/22 12:26	05/16/22 22:30	1
13C4 PFOA	85		50 - 150	05/09/22 12:26	05/16/22 22:30	1
13C5 PFNA	82		50 - 150	05/09/22 12:26	05/16/22 22:30	1
13C2 PFDA	73		50 - 150	05/09/22 12:26	05/16/22 22:30	1
13C2 PFUnA	77		50 - 150	05/09/22 12:26	05/16/22 22:30	1
13C2 PFDoA	72		50 - 150	05/09/22 12:26	05/16/22 22:30	1
13C2 PFTeDA	62		50 - 150	05/09/22 12:26	05/16/22 22:30	1
13C3 PFBS	82		50 - 150	05/09/22 12:26	05/16/22 22:30	1
18O2 PFHxS	73		50 - 150	05/09/22 12:26	05/16/22 22:30	1
13C4 PFOS	72		50 - 150	05/09/22 12:26	05/16/22 22:30	1
d3-NMeFOSAA	74		50 - 150	05/09/22 12:26	05/16/22 22:30	1
d5-NEtFOSAA	82		50 - 150	05/09/22 12:26	05/16/22 22:30	1
13C3 HFPO-DA	80		50 - 150	05/09/22 12:26	05/16/22 22:30	1

**Lab Sample ID: LCS 320-586386/2-A**  
**Matrix Water**  
**Analysis Batch: 588074**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/ NA**  
**Prep Batch: 586386**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	40.0	47.1		ng/L		118	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	41.5		ng/L		104	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	42.6		ng/L		106	71 - 133
Perfluorononanoic acid (PFNA)	40.0	44.3		ng/L		111	69 - 130

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS INN POE

Job ID: 320-87436-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-586386/2-A**  
**Matrix Water**  
**Analysis Batch: 588074**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/ NA**  
**Prep Batch: 586386**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	38.4		ng/L		96	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	42.6		ng/L		107	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	43.5		ng/L		109	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	45.2		ng/L		113	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	42.9		ng/L		107	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	34.2		ng/L		97	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.5		ng/L		95	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	39.2		ng/L		106	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.1		ng/L		105	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.6		ng/L		99	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	37.1		ng/L		100	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.6		ng/L		101	72 - 132
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	38.4		ng/L		102	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	41.8		ng/L		111	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	50		50 - 150
13C4 PFHpA	55		50 - 150
13C4 PFOA	55		50 - 150
13C5 PFNA	55		50 - 150
13C2 PFDA	58		50 - 150
13C2 PFUnA	59		50 - 150
13C2 PFDoA	55		50 - 150
13C2 PFTeDA	60		50 - 150
13C3 PFBS	59		50 - 150
18O2 PFHxS	58		50 - 150
13C4 PFOS	55		50 - 150
d3-NMeFOSAA	58		50 - 150
d5-NEtFOSAA	66		50 - 150
13C3 HFPO-DA	57		50 - 150

**Lab Sample ID: LCSD 320-586386/3-A**  
**Matrix Water**  
**Analysis Batch: 588074**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/ NA**  
**Prep Batch: 586386**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD
							Limits	RPD	
Perfluorohexanoic acid (PFHxA)	40.0	39.6		ng/L		99	72 - 129	17	30
Perfluoroheptanoic acid (PFHpA)	40.0	41.6		ng/L		104	72 - 130	0	30
Perfluorooctanoic acid (PFOA)	40.0	42.2		ng/L		106	71 - 133	1	30

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS INN POE

Job ID: 320-87436-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-586386/3-A**  
**Matrix Water**  
**Analysis Batch: 588074**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/ NA**  
**Prep Batch: 586386**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	40.6		ng/L		101	69 - 130	9	30
Perfluorodecanoic acid (PFDA)	40.0	39.8		ng/L		99	71 - 129	4	30
Perfluoroundecanoic acid (PFUnA)	40.0	39.9		ng/L		100	69 - 133	7	30
Perfluorododecanoic acid (PFDoA)	40.0	41.2		ng/L		103	72 - 134	5	30
Perfluorotridecanoic acid (PFTriA)	40.0	39.0		ng/L		97	65 - 144	15	30
Perfluorotetradecanoic acid (PFTeA)	40.0	38.1		ng/L		95	71 - 132	12	30
Perfluorobutanesulfonic acid (PFBS)	35.4	31.1		ng/L		88	72 - 130	10	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.6		ng/L		92	68 - 131	3	30
Perfluorooctanesulfonic acid (PFOS)	37.1	38.1		ng/L		103	65 - 140	3	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	37.9		ng/L		95	65 - 136	11	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	37.4		ng/L		94	61 - 135	6	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	39.1		ng/L		105	77 - 137	5	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.7		ng/L		102	72 - 132	0	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	38.2		ng/L		101	76 - 136	0	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	43.7		ng/L		116	81 - 141	4	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	84		50 - 150
13C4 PFHpA	85		50 - 150
13C4 PFOA	81		50 - 150
13C5 PFNA	83		50 - 150
13C2 PFDA	80		50 - 150
13C2 PFUnA	96		50 - 150
13C2 PFDoA	81		50 - 150
13C2 PFTeDA	82		50 - 150
13C3 PFBS	89		50 - 150
18O2 PFHxS	85		50 - 150
13C4 PFOS	78		50 - 150
d3-NMeFOSAA	90		50 - 150
d5-NEtFOSAA	90		50 - 150
13C3 HFPO-DA	86		50 - 150

**Lab Sample ID: MB 320-586797/ 1-A**  
**Matrix Water**  
**Analysis Batch: 587703**

**Client Sample ID: Method Blank**  
**Prep Type: Total/ NA**  
**Prep Batch: 586797**

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		05/11/22 05:23	05/14/22 00:05	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		05/11/22 05:23	05/14/22 00:05	1

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS INN POE

Job ID: 320-87436-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: MB 320-586797/ 1-A**  
**Matrix Water**  
**Analysis Batch: 587703**

**Client Sample ID: Method Blank**  
**Prep Type: Total/ NA**  
**Prep Batch: 586797**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		05/11/22 05:23	05/14/22 00:05	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		05/11/22 05:23	05/14/22 00:05	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		05/11/22 05:23	05/14/22 00:05	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		05/11/22 05:23	05/14/22 00:05	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		05/11/22 05:23	05/14/22 00:05	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		05/11/22 05:23	05/14/22 00:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		05/11/22 05:23	05/14/22 00:05	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		05/11/22 05:23	05/14/22 00:05	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		05/11/22 05:23	05/14/22 00:05	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		05/11/22 05:23	05/14/22 00:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		05/11/22 05:23	05/14/22 00:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		05/11/22 05:23	05/14/22 00:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		05/11/22 05:23	05/14/22 00:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		05/11/22 05:23	05/14/22 00:05	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		05/11/22 05:23	05/14/22 00:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		05/11/22 05:23	05/14/22 00:05	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	92		50 - 150	05/11/22 05:23	05/14/22 00:05	1
13C4 PFHpA	94		50 - 150	05/11/22 05:23	05/14/22 00:05	1
13C4 PFOA	94		50 - 150	05/11/22 05:23	05/14/22 00:05	1
13C5 PFNA	92		50 - 150	05/11/22 05:23	05/14/22 00:05	1
13C2 PFDA	91		50 - 150	05/11/22 05:23	05/14/22 00:05	1
13C2 PFUnA	91		50 - 150	05/11/22 05:23	05/14/22 00:05	1
13C2 PFDoA	88		50 - 150	05/11/22 05:23	05/14/22 00:05	1
13C2 PFTeDA	85		50 - 150	05/11/22 05:23	05/14/22 00:05	1
13C3 PFBS	101		50 - 150	05/11/22 05:23	05/14/22 00:05	1
18O2 PFHxS	97		50 - 150	05/11/22 05:23	05/14/22 00:05	1
13C4 PFOS	90		50 - 150	05/11/22 05:23	05/14/22 00:05	1
d3-NMeFOSAA	86		50 - 150	05/11/22 05:23	05/14/22 00:05	1
d5-NEtFOSAA	91		50 - 150	05/11/22 05:23	05/14/22 00:05	1
13C3 HFPO-DA	99		50 - 150	05/11/22 05:23	05/14/22 00:05	1

**Lab Sample ID: LCS 320-586797/2-A**  
**Matrix Water**  
**Analysis Batch: 587703**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/ NA**  
**Prep Batch: 586797**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec
							Limits
Perfluorohexanoic acid (PFHxA)	40.0	40.9		ng/L		102	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	40.7		ng/L		102	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	40.5		ng/L		101	71 - 133
Perfluorononanoic acid (PFNA)	40.0	40.4		ng/L		101	69 - 130
Perfluorodecanoic acid (PFDA)	40.0	39.5		ng/L		99	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	41.5		ng/L		104	69 - 133

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS INN POE

Job ID: 320-87436-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-586797/2-A**  
**Matrix Water**  
**Analysis Batch: 587703**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/ NA**  
**Prep Batch: 586797**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorododecanoic acid (PFDoA)	40.0	38.6		ng/L		97	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	38.8		ng/L		97	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	39.7		ng/L		99	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	35.9		ng/L		101	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.3		ng/L		89	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	36.6		ng/L		99	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.2		ng/L		100	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	37.6		ng/L		94	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	37.5		ng/L		101	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	38.8		ng/L		97	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	39.7		ng/L		105	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	41.6		ng/L		110	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	92		50 - 150
13C4 PFHpA	95		50 - 150
13C4 PFOA	93		50 - 150
13C5 PFNA	90		50 - 150
13C2 PFDA	92		50 - 150
13C2 PFUnA	85		50 - 150
13C2 PFDoA	89		50 - 150
13C2 PFTeDA	83		50 - 150
13C3 PFBS	96		50 - 150
18O2 PFHxS	95		50 - 150
13C4 PFOS	88		50 - 150
d3-NMeFOSAA	85		50 - 150
d5-NEtFOSAA	85		50 - 150
13C3 HFPO-DA	89		50 - 150

**Lab Sample ID: LCSD 320-586797/3-A**  
**Matrix Water**  
**Analysis Batch: 587703**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/ NA**  
**Prep Batch: 586797**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec RPD	
							Limits	Limit
Perfluorohexanoic acid (PFHxA)	40.0	42.4		ng/L		106	72 - 129	4 30
Perfluoroheptanoic acid (PFHpA)	40.0	40.2		ng/L		100	72 - 130	1 30
Perfluorooctanoic acid (PFOA)	40.0	39.4		ng/L		98	71 - 133	3 30
Perfluorononanoic acid (PFNA)	40.0	42.7		ng/L		107	69 - 130	5 30
Perfluorodecanoic acid (PFDA)	40.0	38.4		ng/L		96	71 - 129	3 30

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# QC Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: GUS INN POE

Job ID: 320-87436-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-586797/3-A**  
**Matrix Water**  
**Analysis Batch: 587703**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/ NA**  
**Prep Batch: 586797**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)	40.0	41.2		ng/L		103	69 - 133	1	30
Perfluorododecanoic acid (PFDoA)	40.0	38.8		ng/L		97	72 - 134	1	30
Perfluorotridecanoic acid (PFTriA)	40.0	40.2		ng/L		101	65 - 144	4	30
Perfluorotetradecanoic acid (PFTeA)	40.0	37.0		ng/L		92	71 - 132	7	30
Perfluorobutanesulfonic acid (PFBS)	35.4	35.0		ng/L		99	72 - 130	3	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.4		ng/L		92	68 - 131	4	30
Perfluorooctanesulfonic acid (PFOS)	37.1	38.8		ng/L		104	65 - 140	6	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	38.2		ng/L		96	65 - 136	5	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	38.9		ng/L		97	61 - 135	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	40.2		ng/L		108	77 - 137	7	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.8		ng/L		99	72 - 132	3	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	42.2		ng/L		112	76 - 136	6	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	44.4		ng/L		118	81 - 141	6	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	81		50 - 150
13C4 PFHpA	82		50 - 150
13C4 PFOA	83		50 - 150
13C5 PFNA	79		50 - 150
13C2 PFDA	83		50 - 150
13C2 PFUnA	79		50 - 150
13C2 PFDoA	78		50 - 150
13C2 PFTeDA	78		50 - 150
13C3 PFBS	85		50 - 150
18O2 PFHxS	85		50 - 150
13C4 PFOS	74		50 - 150
d3-NMeFOSAA	79		50 - 150
d5-NEtFOSAA	77		50 - 150
13C3 HFPO-DA	79		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
 Project/Site: GUS INN POE

Job ID: 320-87436-1

## LCMS

### Prep Batch: 586386

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-87436-5	PW-200-C Port Composite	Total/NA	Water	3535	
320-87436-6	PW-200	Total/NA	Water	3535	
MB 320-586386/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-586386/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-586386/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Prep Batch: 586797

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-87436-8	PW-200-Sink	Total/NA	Water	3535	
MB 320-586797/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-586797/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-586797/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 587703

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-87436-8	PW-200-Sink	Total/NA	Water	EPA 537(Mod)	586797
MB 320-586797/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	586797
LCS 320-586797/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	586797
LCSD 320-586797/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	586797

### Analysis Batch: 588074

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-87436-5	PW-200-C Port Composite	Total/NA	Water	EPA 537(Mod)	586386
320-87436-6	PW-200	Total/NA	Water	EPA 537(Mod)	586386
MB 320-586386/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	586386
LCS 320-586386/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	586386
LCSD 320-586386/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	586386



# Lab Chronicle

Client: Shannon & Wilson, Inc  
 Project/Site: GUS INN POE

Job ID: 320-87436-1

**Client Sample ID: PW-200-C Port Composite**

**Lab Sample ID: 320-87436-5**

Date Collected: 04/ 27/ 22 13:23

Matrix : Water

Date Received: 05/ 03/ 22 15:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			287.9 mL	10.0 mL	586386	05/09/22 12:26	RAC	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			588074	05/17/22 01:22	K1S	TAL SAC

**Client Sample ID: PW-200**

**Lab Sample ID: 320-87436-6**

Date Collected: 04/ 27/ 22 13:28

Matrix : Water

Date Received: 05/ 03/ 22 15:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274.2 mL	10.0 mL	586386	05/09/22 12:26	RAC	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			588074	05/17/22 01:32	K1S	TAL SAC

**Client Sample ID: PW-200-Sink**

**Lab Sample ID: 320-87436-8**

Date Collected: 04/ 27/ 22 12:36

Matrix : Water

Date Received: 05/ 03/ 22 15:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			266.7 mL	10.0 mL	586797	05/11/22 05:23	EFG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587703	05/14/22 04:25	RS1	TAL SAC

**Laboratory References:**

TAL SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: GUS INN POE

Job ID: 320-87436-1

## Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

1

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# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: GUS INN POE

Job ID: 320-87436-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	TAL SAC TAL SAC

**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: GUS INN POE

Job ID: 320-87436-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-87436-5	PW-200-C Port Composite	Water	04/27/22 13:23	05/03/22 15:30
320-87436-6	PW-200	Water	04/27/22 13:28	05/03/22 15:30
320-87436-8	PW-200-Sink	Water	04/27/22 12:36	05/03/22 15:30

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# CHAIN-OF-CUSTODY RECORD

Laboratory ES T NCA of 1  
 Attn: D. Attkuter  
 Analytical Methods (include preservative if used)

Quote No: \_\_\_\_\_  
 J-Flags:  Yes  No

Turn Around Time:  
 Normal  Rush  
 Please Specify \_\_\_\_\_

Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers	300 DMS x 18	

Sample Identity	Lab No.	Time	Date Sampled					
*HOLD PW-200-Unit 2-C Port *HOLD	*1311		4/27/22	X				
*HOLD PW-200-Unit 2-C Port *HOLD	*1315		4/27/22	X				
*HOLD PW-200-Unit 3-C Port *HOLD	*1318			X				
*HOLD PW-200-Unit 4-C Port	1321			X				
PW-200-C Port Composite	1323			X				
PW-200	1328			X				
*HOLD PW-200-F Port *HOLD	*1301			X				
PW-200-SINK	1286			X				

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: _____ Printed Name: <u>A. Mastos</u> Company: <u>SAW, Inc</u>	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____
Time: <u>1530</u>	Time: _____	Time: _____
Date: <u>4/27/22</u>	Date: _____	Date: _____
Received By: 1.	Received By: 2.	Received By: 3.
Signature: _____	Signature: _____	Signature: _____
Time: _____	Time: _____	Time: _____
Date: _____	Date: _____	Date: _____

**Project Information**

Number: 11543-001  
 Name: GUSINN POE  
 Contact: KLF  
 Ongoing Project? Yes  No   
 Sampler: ADAM

**Sample Receipt**

Total No. of Containers: \_\_\_\_\_  
 COC Seals/Intact? Y/N/NA \_\_\_\_\_  
 Received Good Cond./Cold Temp: \_\_\_\_\_  
 Delivery Method: \_\_\_\_\_



320-87436 Chain of Custody

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-87436-1

**Login Number: 87436**

**List Source: Eurofins Sacramento**

**List Number: 1**

**Creator: Pratali, Sandra A**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	seals
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



**Laboratory Data Review Checklist**

Completed By:

Mason Craker

Title:

Geologist

Date:

May 18, 2022

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-87436-1

Laboratory Report Date:

May 17, 2022

CS Site Name:

DRM Gustavus Airport Statewide PFAS

ADEC File Number:

Hazard Identification Number:

Laboratory Report Date:

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

Analyses were performed by the Eurofins TestAmerica Laboratory in West Sacramento, CA. The laboratory is approved by the DEC CS program and certified under the Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP) for the requested analyses.

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

The requested analyses were conducted by Eurofins TestAmerica of West Sacramento, CA.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

Samples do not require preservation other than temperature.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form notes that the samples were received in good condition.



## Laboratory Report Date:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes  No  N/A  Comments:

See above.

- e. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

#### 4. Case Narrative

- a. Present and understandable?

Yes  No  N/A  Comments:

- b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

The case narrative indicates the following:

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-586386 and preparation batch 320-586797.

- c. Were all corrective actions documented?

Yes  No  N/A  Comments:

We reference the LCS/LCSD samples.

- d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not note an effect on data quality or usability. See the following sections for our assessment.

#### 5. Samples Results

- a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

Laboratory Report Date:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

The reporting limit (RL) is less than the applicable DEC regulatory limit for the project.

e. Data quality or usability affected?

The data quality and/or usability was not affected; see above.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

There were no detections in the method blank samples associated with these project samples.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

Laboratory Report Date:

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A  Comments:

- ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; see above.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

Laboratory Report Date:

## c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

- i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

A MS/MSD was not analyzed with this work order; however, the laboratory analyzed LCS and LCSD samples to assess laboratory accuracy and precision.

- ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; MS and MSD samples were not analyzed for this work order.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

## d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes  No  N/A  Comments:

Laboratory Report Date:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A  Comments:

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

- iv. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

- e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes  No  N/A  Comments:

PFAS are not volatile compounds. A trip blank is not required for the requested analysis.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

- iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; a trip blank is not required for the requested analysis.

- v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

Laboratory Report Date:

## f. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

Field duplicates are not collected for this project.

- ii. Submitted blind to lab?

Yes  No  N/A  Comments:

See above.

- iii. Precision – All relative percent differences (RPD) less than specified project objectives?
- 
- (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration $R_2$  = Field Duplicate ConcentrationYes  No  N/A  Comments:

See above.

- iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and/or usability was not affected; see above.

- g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

Reusable equipment was not used in the sampling procedure; therefore, an equipment blank is unnecessary.

- i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

- ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

- iii. Data quality or usability affected?

Comments:

No; see above.

Laboratory Report Date:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A

Comments:



## Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks  
2355 Hill Rd.  
Fairbanks, AK 99701  
(907)479-0600

Report Number: **1215600**

Client Project: **101543-001 DRM Gus**

Dear Kristen Freiburger,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jennifer at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

---

Jennifer Dawkins  
Project Manager  
Jennifer.Dawkins@sgs.com

Date



## Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**

SGS Project: **1215600**

Project Name/Site: **101543-001 DRM Gus**

Project Contact: **Kristen Freiburger**

Refer to sample receipt form for information on sample condition.

\*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 09/20/2021 10:29:47AM

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

**Sample Summary**

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
PW-200	1215600001	08/24/2021	08/31/2021	Water (Surface, Eff., Ground)
PW-200-Sink	1215600002	08/24/2021	08/31/2021	Water (Surface, Eff., Ground)
Canceled PW-200-F Port	1215600003	08/24/2021	08/31/2021	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
EP200.8	Metals in Water by 200.8 ICP-MS

## Detectable Results Summary

Client Sample ID: **PW-200**  
Lab Sample ID: 1215600001  
**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	35.5	ug/L

Print Date: 09/20/2021 10:29:52AM

SGS North America Inc.

200 West Potter Drive, Anchorage, AK 99518  
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Member of SGS Group



**Results of PW-200**

Client Sample ID: **PW-200**  
Client Project ID: **101543-001 DRM Gus**  
Lab Sample ID: 1215600001  
Lab Project ID: 1215600

Collection Date: 08/24/21 14:35  
Received Date: 08/31/21 09:49  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	35.5	5.00	1.50	ug/L	1		09/08/21 14:46

**Batch Information**

Analytical Batch: MMS11289  
Analytical Method: EP200.8  
Analyst: DSD  
Analytical Date/Time: 09/08/21 14:46  
Container ID: 1215600001-A

Prep Batch: MXX34604  
Prep Method: E200.2  
Prep Date/Time: 09/03/21 11:14  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL



**Results of PW-200-Sink**

Client Sample ID: **PW-200-Sink**  
Client Project ID: **101543-001 DRM Gus**  
Lab Sample ID: 1215600002  
Lab Project ID: 1215600

Collection Date: 08/24/21 13:58  
Received Date: 08/31/21 09:49  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	2.50 U	5.00	1.50	ug/L	1		09/08/21 14:49

**Batch Information**

Analytical Batch: MMS11289  
Analytical Method: EP200.8  
Analyst: DSD  
Analytical Date/Time: 09/08/21 14:49  
Container ID: 1215600002-A

Prep Batch: MXX34604  
Prep Method: E200.2  
Prep Date/Time: 09/03/21 11:14  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL



### Method Blank

Blank ID: MB for HBN 1825072 [MXX/34604]

Blank Lab ID: 1634234

QC for Samples:

1215600001, 1215600002

Matrix: Water (Surface, Eff., Ground)

### Results by EP200.8

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	2.50U	5.00	1.50	ug/L

### Batch Information

Analytical Batch: MMS11289

Analytical Method: EP200.8

Instrument: P7 Agilent 7800

Analyst: DSD

Analytical Date/Time: 9/8/2021 2:11:22PM

Prep Batch: MXX34604

Prep Method: E200.2

Prep Date/Time: 9/3/2021 11:14:18AM

Prep Initial Wt./Vol.: 20 mL

Prep Extract Vol: 50 mL

Print Date: 09/20/2021 10:29:55AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1215600 [MXX34604]  
Blank Spike Lab ID: 1634235  
Date Analyzed: 09/08/2021 14:14

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1215600001, 1215600002

## Results by EP200.8

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Arsenic	1000	903	90	( 85-115 )

## Batch Information

Analytical Batch: **MMS11289**  
Analytical Method: **EP200.8**  
Instrument: **P7 Agilent 7800**  
Analyst: **DSD**

Prep Batch: **MXX34604**  
Prep Method: **E200.2**  
Prep Date/Time: **09/03/2021 11:14**  
Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL  
Dupe Init Wt./Vol.: Extract Vol:

Print Date: 09/20/2021 10:29:57AM



## Matrix Spike Summary

Original Sample ID: 1634237  
 MS Sample ID: 1634238 MS  
 MSD Sample ID:

Analysis Date: 09/08/2021 14:19  
 Analysis Date: 09/08/2021 14:22  
 Analysis Date:  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1215600001, 1215600002

## Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	2.50U	1000	906	91				70-130		

## Batch Information

Analytical Batch: MMS11289  
 Analytical Method: EP200.8  
 Instrument: P7 Agilent 7800  
 Analyst: DSD  
 Analytical Date/Time: 9/8/2021 2:22:00PM

Prep Batch: MXX34604  
 Prep Method: DW Digest for Metals on ICP-MS  
 Prep Date/Time: 9/3/2021 11:14:18AM  
 Prep Initial Wt./Vol.: 20.00mL  
 Prep Extract Vol: 50.00mL

## Matrix Spike Summary

Original Sample ID: 1634239  
 MS Sample ID: 1634245 MS  
 MSD Sample ID:

Analysis Date: 09/08/2021 14:24  
 Analysis Date: 09/08/2021 14:27  
 Analysis Date:  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1215600001, 1215600002

## Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	7.61	1000	902	89				70-130		

## Batch Information

Analytical Batch: MMS11289  
 Analytical Method: EP200.8  
 Instrument: P7 Agilent 7800  
 Analyst: DSD  
 Analytical Date/Time: 9/8/2021 2:27:31PM

Prep Batch: MXX34604  
 Prep Method: DW Digest for Metals on ICP-MS  
 Prep Date/Time: 9/3/2021 11:14:18AM  
 Prep Initial Wt./Vol.: 20.00mL  
 Prep Extract Vol: 50.00mL

## **Dawkins, Jennifer A (Fairbanks)**

---

**From:** Dawkins, Jennifer A (Fairbanks)  
**Sent:** Friday, September 17, 2021 11:00 AM  
**To:** Dawkins, Jennifer A (Fairbanks)  
**Subject:** 1215600 Change Order

Cancel the sample on Hold (sample 3), per client.

**Jennifer A-B Dawkins**  
**Industries & Environment**  
Fairbanks Client Services  
Project Manager - Alaska  
**SGS**  
3180 Peger Rd. Ste. 190  
Fairbanks, AK 99709  
907-474-8656  
907-322-8444  
[jennifer.dawkins@sgs.com](mailto:jennifer.dawkins@sgs.com)

# CHAIN-OF-CUSTODY RECORD

Analytical Methods (include preservative if used)

Quote No: **1215600**



Turn Around Time:  Normal  Rush  
 Please Specify \_\_\_\_\_  
 MSA Number: MSA-565-2016  
 J-Flags:  Yes  No

Total Arsenic

Sample Identity	Lab No.	Time	Date Sampled	Total No.	Remarks/Matrix Composition/Grab? Sample Containers
PW-200	DA	1435	8/24/21	1	ground waters
PW-200 - SINK	DA	1358	8/24/21	1	
*PW-200 - F Port + HOLD	DA	1411	8/24/21	1	

Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Number: <u>101543-001</u>	Total No. of Containers: <u>3</u>	Signature: <u>[Signature]</u> Time: <u>1240</u>	Signature: <u>[Signature]</u> Time: <u>1400</u>	Signature: _____ Time: _____
Name: <u>DRM GWS</u>	COC Seals/Intact? <u>Y/N/A</u>	Printed Name: <u>Justin Risley</u> Date: <u>8-30-21</u>	Printed Name: <u>[Signature]</u> Date: <u>8/30/21</u>	Printed Name: _____ Date: _____
Contact: <u>KRF</u>	Received Good Cond./Cold	Company: <u>SGS</u>	Company: <u>SGS</u>	Company: _____
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Temp: <u>6-0</u>	Received By: 1. Signature: <u>[Signature]</u> Time: <u>1400</u>	Received By: 2. Signature: _____ Time: _____	Received By: 3. Signature: <u>[Signature]</u> Time: <u>0949</u>
Sampler: <u>AWM</u>	Delivery Method: _____	Printed Name: <u>Justin DeWkins</u> Date: <u>8/30/21</u>	Printed Name: _____ Date: _____	Printed Name: <u>Emily Hebenhorde</u> Date: <u>8/31/21</u>
Notes: _____		Company: <u>SGS</u>	Company: _____	Company: <u>SGS</u>
Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report Yellow - w/shipment - for consignee files Pink - Shannon & Wilson - job file		4.7 D60		



SGS Workorder #:

S&W



Review Criteria		Condition (Yes, No, N/A)	Exceptions noted below	
<b>Chain of Custody / Temperature Requirements</b>			Yes	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	<input type="checkbox"/>	N/A		
COC accompanied samples?	<input type="checkbox"/>	Yes		
DOD: Were samples received in COC corresponding coolers?	<input type="checkbox"/>	N/A		
<input type="checkbox"/> **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required				
Temperature blank compliant* (i.e., 0-6 °C after CF)?	<input type="checkbox"/>	Yes	Cooler ID: 1 @ 6.0 °C	Therm. ID: D62
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.	<input type="checkbox"/>		Cooler ID: @ °C	Therm. ID:
	<input type="checkbox"/>		Cooler ID: @ °C	Therm. ID:
	<input type="checkbox"/>		Cooler ID: @ °C	Therm. ID:
	<input type="checkbox"/>		Cooler ID: @ °C	Therm. ID:
*If >6°C, were samples collected <8 hours ago?		<input type="checkbox"/>		
If <0°C, were sample containers ice free?		<input type="checkbox"/>		
Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.				
<b>Holding Time / Documentation / Sample Condition Requirements</b>			Note: Refer to form F-083 "Sample Guide" for specific holding times.	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	<input type="checkbox"/>	N/C		
**Note: If times differ <1hr, record details & login per COC.				
***Note: If sample information on containers differs from COC, SGS will default to COC information				
Were samples in good condition (no leaks/cracks/breakage)?	<input type="checkbox"/>	Yes	Do not run sample 3. It will be run pending other results.	
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals))	<input type="checkbox"/>	Yes		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input type="checkbox"/>	N/A		
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	<input type="checkbox"/>	N/A		
Were all soil VOAs field extracted with MeOH+BFB?	<input type="checkbox"/>	N/A		
For Rush/Short Hold Time, was RUSH/Short HT email sent?	<input type="checkbox"/>	N/A		
<b>Note to Client:</b> Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.				
Additional notes (if applicable):				
<b>SGS Profile #</b>	<b>347128</b>		<b>347128</b>	



e-Sample Receipt Form

SGS Workorder #:

1215600



1 2 1 5 6 0 0

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
<b>Chain of Custody / Temperature Requirements</b>		
Were Custody Seals intact? Note # & location	Yes	1F, 1B
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 4.7 °C Therm. ID: D60
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
<b>Holding Time / Documentation / Sample Condition Requirements</b>		
Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Were samples received within holding time?	Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	No	Total Arsenic method not listed. 200.8 per PM direction.
N/A ***Exemption permitted for metals (e.g.200.8/6020B).		
Were proper containers (type/mass/volume/preservative***)used?	Yes	
<b>Volatile / LL-Hg Requirements</b>		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	N/A	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	
<b>Note to Client:</b> Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



### Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1215600001-A	HNO3 to pH < 2	OK			
1215600002-A	HNO3 to pH < 2	OK			
1215600003-A	HNO3 to pH < 2	OK			

#### Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

## Laboratory Data Review Checklist

Completed By:

Kristen Freiburger

Title:

Associate – Chemist

Date:

September 20, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS North America, Inc. (SGS)

Laboratory Report Number:

1215600

Laboratory Report Date:

September 20, 2021

CS Site Name:

DRM Gustavus PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904



1215600

Laboratory Report Date:

September 20, 2021

CS Site Name:

DRM Gustavus PFAS

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

The samples were analyzed by SGS.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

The laboratory notes the analytical method is not listed on the COC. The samples were analyzed by EPA Method 200.8, per the Shannon & Wilson PM direction. Results are not affected.

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

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c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt forms note that the samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes  No  N/A  Comments:

The sample receipt forms note that the samples were received in good condition.

e. Data quality or usability affected?

Comments:

Data quality and usability are not affected.

#### 4. Case Narrative

a. Present and understandable?

Yes  No  N/A  Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

The case narrative refers to the sample receipt to discuss sample condition.

c. Were all corrective actions documented?

Yes  No  N/A  Comments:

The laboratory does not discuss any corrective actions.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The results are unaffected. See the following sections for our assessment.

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5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not included with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

e. Data quality or usability affected?

Data quality or usability are not affected.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

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iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

v. Data quality or usability affected?

Comments:

The results are unaffected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A  Comments:

Organics were not reported with this work order.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

An LCS was reported with this analysis. We do not have a measure of precision for this analysis.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

The laboratory did not run a duplicate for the LCS sample. We do not have a measure of precision

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v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

No flags are required.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality or usability is not affected.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Organics were not included with this work order.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Two separate MS samples (not duplicates) were reported with this analysis. We do not have a measure of precision for this analysis.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A  Comments:

See above.

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v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality and usability are not affected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes  No  N/A  Comments:

Organic analyses were not included with this work order.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A  Comments:

See above.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

N/A; see above.

iv. Data quality or usability affected?

Comments:

Data quality and usability are not affected.

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e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?  
(If not, enter explanation below.)

Yes  No  N/A  Comments:

Volatile compounds were not requested for this project. A trip blank is not required.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?  
(If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

See above.

- iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

See above.

- v. Data quality or usability affected?

Comments:

Data quality and usability are not affected.

f. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

Field duplicates are not submitted for this project task.

- ii. Submitted blind to lab?

Yes  No  N/A  Comments:

See above.

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iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where  $R_1$  = Sample Concentration  
 $R_2$  = Field Duplicate Concentration

Yes  No  N/A  Comments:

See above.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality and usability are not affected.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

The sample was not collected with reusable equipment; therefore, an equipment blank is not necessary.

i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; see above.

iii. Data quality or usability affected?

Comments:

Data quality and usability are not affected.



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7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A       Comments:

N/A



## Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks  
2355 Hill Rd.  
Fairbanks, AK 99701  
(907)479-0600

Report Number: **1217255**

Client Project: **101543-001 GST Risk**

Dear Kristen Freiburger,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jennifer at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

---

Jennifer Dawkins  
Project Manager  
Jennifer.Dawkins@sgs.com

Date

## Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**  
SGS Project: **1217255**  
Project Name/Site: **101543-001 GST Risk**  
Project Contact: **Kristen Freiburger**

Refer to sample receipt form for information on sample condition.

\*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 11/22/2021 9:00:34AM

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
PW-200-Sink	1217255001	10/25/2021	11/02/2021	Water (Surface, Eff., Ground)
PW-200-F port	1217255002	10/25/2021	11/02/2021	Water (Surface, Eff., Ground)
PW-200	1217255003	10/25/2021	11/02/2021	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
EP200.8	Metals in Water by 200.8 ICP-MS

## Detectable Results Summary

Client Sample ID: **PW-200**  
Lab Sample ID: 1217255003  
**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	13.4	ug/L

## Results of PW-200-Sink

Client Sample ID: **PW-200-Sink**  
 Client Project ID: **101543-001 GST Risk**  
 Lab Sample ID: 1217255001  
 Lab Project ID: 1217255

Collection Date: 10/25/21 12:40  
 Received Date: 11/02/21 09:30  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	2.50 U	5.00	1.50	ug/L	1		11/05/21 12:21

## Batch Information

Analytical Batch: MMS11380  
 Analytical Method: EP200.8  
 Analyst: AKA  
 Analytical Date/Time: 11/05/21 12:21  
 Container ID: 1217255001-A

Prep Batch: MXX34806  
 Prep Method: E200.2  
 Prep Date/Time: 11/04/21 12:43  
 Prep Initial Wt./Vol.: 20 mL  
 Prep Extract Vol: 50 mL

## Results of PW-200-F port

Client Sample ID: **PW-200-F port**  
 Client Project ID: **101543-001 GST Risk**  
 Lab Sample ID: 1217255002  
 Lab Project ID: 1217255

Collection Date: 10/25/21 12:45  
 Received Date: 11/02/21 09:30  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	2.50 U	5.00	1.50	ug/L	1		11/16/21 16:04

## Batch Information

Analytical Batch: MMS11391  
 Analytical Method: EP200.8  
 Analyst: DSD  
 Analytical Date/Time: 11/16/21 16:04  
 Container ID: 1217255002-A

Prep Batch: MXX34831  
 Prep Method: E200.2  
 Prep Date/Time: 11/15/21 12:06  
 Prep Initial Wt./Vol.: 20 mL  
 Prep Extract Vol: 50 mL





**Results of PW-200**

Client Sample ID: **PW-200**  
Client Project ID: **101543-001 GST Risk**  
Lab Sample ID: 1217255003  
Lab Project ID: 1217255

Collection Date: 10/25/21 13:20  
Received Date: 11/02/21 09:30  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	13.4	5.00	1.50	ug/L	1		11/05/21 12:29

**Batch Information**

Analytical Batch: MMS11380  
Analytical Method: EP200.8  
Analyst: AKA  
Analytical Date/Time: 11/05/21 12:29  
Container ID: 1217255003-A

Prep Batch: MXX34806  
Prep Method: E200.2  
Prep Date/Time: 11/04/21 12:43  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

## Method Blank

Blank ID: MB for HBN 1828094 [MXX/34806]

Blank Lab ID: 1645787

QC for Samples:

1217255001, 1217255003

Matrix: Water (Surface, Eff., Ground)

## Results by EP200.8

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	2.50U	5.00	1.50	ug/L

## Batch Information

Analytical Batch: MMS11380

Analytical Method: EP200.8

Instrument: P7 Agilent 7800

Analyst: AKA

Analytical Date/Time: 11/5/2021 11:24:45AM

Prep Batch: MXX34806

Prep Method: E200.2

Prep Date/Time: 11/4/2021 12:43:54PM

Prep Initial Wt./Vol.: 20 mL

Prep Extract Vol: 50 mL

Print Date: 11/22/2021 9:00:42AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1217255 [MXX34806]

Blank Spike Lab ID: 1645788

Date Analyzed: 11/05/2021 11:27

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1217255001, 1217255003

## Results by EP200.8

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Arsenic	1000	975	98	( 85-115 )

## Batch Information

Analytical Batch: **MMS11380**

Analytical Method: **EP200.8**

Instrument: **P7 Agilent 7800**

Analyst: **AKA**

Prep Batch: **MXX34806**

Prep Method: **E200.2**

Prep Date/Time: **11/04/2021 12:43**

Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL

Dupe Init Wt./Vol.: Extract Vol:

## Matrix Spike Summary

Original Sample ID: 1645790  
 MS Sample ID: 1645792 MS  
 MSD Sample ID:

Analysis Date: 11/05/2021 11:32  
 Analysis Date: 11/05/2021 11:35  
 Analysis Date:  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1217255001, 1217255003

## Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	5.10	1000	959	95				70-130		

## Batch Information

Analytical Batch: MMS11380  
 Analytical Method: EP200.8  
 Instrument: P7 Agilent 7800  
 Analyst: AKA  
 Analytical Date/Time: 11/5/2021 11:35:32AM

Prep Batch: MXX34806  
 Prep Method: DW Digest for Metals on ICP-MS  
 Prep Date/Time: 11/4/2021 12:43:54PM  
 Prep Initial Wt./Vol.: 20.00mL  
 Prep Extract Vol: 50.00mL

## Matrix Spike Summary

Original Sample ID: 1645791  
 MS Sample ID: 1645793 MS  
 MSD Sample ID:

Analysis Date: 11/05/2021 11:38  
 Analysis Date: 11/05/2021 11:40  
 Analysis Date:  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1217255001, 1217255003

## Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	2.50U	1000	946	95				70-130		

## Batch Information

Analytical Batch: MMS11380  
 Analytical Method: EP200.8  
 Instrument: P7 Agilent 7800  
 Analyst: AKA  
 Analytical Date/Time: 11/5/2021 11:40:55AM

Prep Batch: MXX34806  
 Prep Method: DW Digest for Metals on ICP-MS  
 Prep Date/Time: 11/4/2021 12:43:54PM  
 Prep Initial Wt./Vol.: 20.00mL  
 Prep Extract Vol: 50.00mL

## Method Blank

Blank ID: MB for HBN 1828545 [MXX/34831]  
Blank Lab ID: 1647255

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1217255002

## Results by EP200.8

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	2.50U	5.00	1.50	ug/L

## Batch Information

Analytical Batch: MMS11391  
Analytical Method: EP200.8  
Instrument: P7 Agilent 7800  
Analyst: DSD  
Analytical Date/Time: 11/16/2021 3:42:46PM

Prep Batch: MXX34831  
Prep Method: E200.2  
Prep Date/Time: 11/15/2021 12:06:21PM  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 11/22/2021 9:00:47AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1217255 [MXX34831]

Blank Spike Lab ID: 1647256

Date Analyzed: 11/16/2021 15:45

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1217255002

## Results by EP200.8

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Arsenic	1000	982	98	( 85-115 )

## Batch Information

Analytical Batch: **MMS11391**

Analytical Method: **EP200.8**

Instrument: **P7 Agilent 7800**

Analyst: **DSD**

Prep Batch: **MXX34831**

Prep Method: **E200.2**

Prep Date/Time: **11/15/2021 12:06**

Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL

Dupe Init Wt./Vol.: Extract Vol:

## Matrix Spike Summary

Original Sample ID: 1647258  
 MS Sample ID: 1647263 MS  
 MSD Sample ID:

Analysis Date: 11/16/2021 15:50  
 Analysis Date: 11/16/2021 15:53  
 Analysis Date:  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1217255002

## Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	1.54J	1000	969	97				70-130		

## Batch Information

Analytical Batch: MMS11391  
 Analytical Method: EP200.8  
 Instrument: P7 Agilent 7800  
 Analyst: DSD  
 Analytical Date/Time: 11/16/2021 3:53:00PM

Prep Batch: MXX34831  
 Prep Method: DW Digest for Metals on ICP-MS  
 Prep Date/Time: 11/15/2021 12:06:21PM  
 Prep Initial Wt./Vol.: 20.00mL  
 Prep Extract Vol: 50.00mL



## Matrix Spike Summary

Original Sample ID: 1647262  
 MS Sample ID: 1647264 MS  
 MSD Sample ID:

Analysis Date: 11/16/2021 15:56  
 Analysis Date: 11/16/2021 15:58  
 Analysis Date:  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1217255002

## Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	5.20	1000	1030	103				70-130		

## Batch Information

Analytical Batch: MMS11391  
 Analytical Method: EP200.8  
 Instrument: P7 Agilent 7800  
 Analyst: DSD  
 Analytical Date/Time: 11/16/2021 3:58:00PM

Prep Batch: MXX34831  
 Prep Method: DW Digest for Metals on ICP-MS  
 Prep Date/Time: 11/15/2021 12:06:21PM  
 Prep Initial Wt./Vol.: 20.00mL  
 Prep Extract Vol: 50.00mL

## **Dawkins, Jennifer A (Fairbanks)**

---

**From:** Dawkins, Jennifer A (Fairbanks)  
**Sent:** Tuesday, November 9, 2021 9:48 AM  
**To:** Dawkins, Jennifer A (Fairbanks)  
**Subject:** 1217255 Change Order

Please run the sample on Hold, per client.

**Jennifer A-B Dawkins**  
**Industries & Environment**  
Fairbanks Client Services  
Project Manager - Alaska  
**SGS**  
3180 Peger Rd. Ste. 190  
Fairbanks, AK 99709  
907-474-8656  
907-322-8444  
[jennifer.dawkins@sgs.com](mailto:jennifer.dawkins@sgs.com)

# CHAIN-OF-CUSTODY RECORD

Analytical Methods (include preservative if used)

Profile # 347128

Quote No:   
 J-Flags:  Yes  No

Turn Around Time:   
 Normal  Rush   
 Please Specify

1217255



ARSENIC

Remarks/Matrix Composition/Grab? Sample Containers

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PW-200-SINK	(1A)	1240	10/25/21	X	groundwater w/HNO <sub>3</sub>
PW-200-F Port	(2A)	1245		X	(ON HOLD)
PW-200	(3A)	1320	✓	X	

**Project Information**  
 Number: 101543-001  
 Name: CST Risk  
 Contact: Kristen  
 Ongoing Project? Yes  No   
 Sampler: VTY

**Sample Receipt**  
 Total No. of Containers: 3  
 COC Seals/Intact? Y/N/A HD  
 Received Good Cond./Cold Y  
 Temp: 2.5  
 Delivery Method: hand

**Notes:**  
 Sample PW-200 - F Port is on hold. Contact Kristen after results of other 2 samples.

**Relinquished By: 1**  
 Signature: [Signature]  
 Printed Name: Veselina Yakimova  
 Company: Shannon & Wilson  
 Time: 1650  
 Date: 10/24/21

**Received By: 1**  
 Signature: [Signature]  
 Printed Name: Cecelia I Missik  
 Company: SGS  
 Time: 1650  
 Date: 10/24/21

**Relinquished By: 2**  
 Signature: [Signature]  
 Printed Name: Cecelia I Missik  
 Company: SGS  
 Time: 1600  
 Date: 11/11/21

**Received By: 2**  
 Signature: [Signature]  
 Printed Name: Ryan Conlon  
 Company: SGS  
 Time: 1630  
 Date: 11/21/21

**Relinquished By: 3**  
 Signature: [Signature]  
 Printed Name: [Signature]  
 Company: [Signature]  
 Time: [Signature]  
 Date: [Signature]

**Received By: 3**  
 Signature: [Signature]  
 Printed Name: Ryan Conlon  
 Company: SGS  
 Time: 1630  
 Date: 11/21/21

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file



e-Sample Receipt Form FBK

SGS Workorder #:

S&W

S & W

Review Criteria		Condition (Yes, No, N/A)	Exceptions Noted below	
<b>Chain of Custody / Temperature Requirements</b>			Yes	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location		N/A		
COC accompanied samples?		Yes		
DOD: Were samples received in COC corresponding coolers?				
<input type="checkbox"/> **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required				
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1	@ 2.5 °C	Therm. ID: D57
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		Cooler ID:	@	°C Therm. ID:
		Cooler ID:	@	°C Therm. ID:
		Cooler ID:	@	°C Therm. ID:
		Cooler ID:	@	°C Therm. ID:
*If >6°C, were samples collected <8 hours ago?				
If <0°C, were sample containers ice free?				
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.				
<b>Holding Time / Documentation / Sample Condition Requirements</b>		Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Do samples match COC** (i.e., sample IDs, dates/times collected)?		N/C		
**Note: If times differ <1hr, record details & login per COC.				
***Note: If sample information on containers differs from COC, SGS will default to COC information				
Were samples in good condition (no leaks/cracks/breakage)?		Yes		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)		Yes		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?		N/A		
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?		N/A		
Were all soil VOAs field extracted with MeOH+BFB?		N/A		
For Rush/Short Hold Time, was RUSH/Short HT email sent?		N/A		
<b>Note to Client:</b> Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.				
Additional notes (if applicable):				
<b>SGS Profile #</b>			0	



e-Sample Receipt Form

SGS Workorder #:

1217255

1217255

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
<b>Chain of Custody / Temperature Requirements</b>		N/A Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	Yes	1F, 1B
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 2.9 °C Therm. ID: D63
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
<b>Holding Time / Documentation / Sample Condition Requirements</b>		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
Were proper containers (type/mass/volume/preservative***)used?		N/A ***Exemption permitted for metals (e.g.200.8/6020A).
<b>Volatile / LL-Hg Requirements</b>		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	N/A	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	
<b>Note to Client:</b> Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



## Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1217255001-A	NaOH to pH > 10	OK			
1217255002-A	NaOH to pH > 10	OK			
1217255003-A	NaOH to pH > 10	OK			

### Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

**Laboratory Data Review Checklist**

Completed By:

Justin Risley

Title:

Engineering Staff

Date:

November 22, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS North America, Inc. (SGS)

Laboratory Report Number:

1217255

Laboratory Report Date:

November 22, 2021

CS Site Name:

DRM [REDACTED] POET - PFAS

ADEC File Number:

[REDACTED]

Hazard Identification Number:

[REDACTED]

1217255

Laboratory Report Date:

November 22, 2021

CS Site Name:

DRM Gustavus Inn POET - PFAS

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

The samples were analyzed by SGS.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:



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Laboratory Report Date:

November 22, 2021

CS Site Name:

DRM Gustavus Inn POET - PFAS

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt forms note that the samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes  No  N/A  Comments:

The sample receipt forms note that the samples were received in good condition.

e. Data quality or usability affected?

Comments:

Data quality and usability are not affected.

#### 4. Case Narrative

a. Present and understandable?

Yes  No  N/A  Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

The case narrative refers to the sample receipt to discuss sample condition.

c. Were all corrective actions documented?

Yes  No  N/A  Comments:

The laboratory does not discuss any corrective actions.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The results are unaffected. See the following sections for our assessment.

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5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not included with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

e. Data quality or usability affected?

Data quality or usability are not affected.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

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iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

v. Data quality or usability affected?

Comments:

The results are unaffected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A  Comments:

Organics were not reported with this work order.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

An LCS was reported with this analysis. We do not have a measure of precision for this analysis.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

The laboratory did not run a duplicate for the LCS sample. We do not have a measure of precision

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v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

No flags are required.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality or usability is not affected.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Organics were not included with this work order.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Two separate MS samples (not duplicates) were reported with this analysis. We do not have a measure of precision for this analysis.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A  Comments:

See above.

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v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality and usability are not affected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes  No  N/A  Comments:

Organic analyses were not included with this work order.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A  Comments:

See above.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

N/A; see above.

iv. Data quality or usability affected?

Comments:

Data quality and usability are not affected.

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Laboratory Report Date:

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CS Site Name:

DRM Gustavus Inn POET - PFAS

e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?  
(If not, enter explanation below.)

Yes  No  N/A  Comments:

Volatile compounds were not requested for this project. A trip blank is not required.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?  
(If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

See above.

- iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

See above.

- v. Data quality or usability affected?

Comments:

Data quality and usability are not affected.

f. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

Field duplicates are not submitted for this project task.

- ii. Submitted blind to lab?

Yes  No  N/A  Comments:

See above.

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iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where  $R_1$  = Sample Concentration  
 $R_2$  = Field Duplicate Concentration

Yes  No  N/A  Comments:

See above.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality and usability are not affected.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

The sample was not collected with reusable equipment; therefore, an equipment blank is not necessary.

i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; see above.

iii. Data quality or usability affected?

Comments:

Data quality and usability are not affected.

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Laboratory Report Date:

November 22, 2021

CS Site Name:

DRM Gustavus Inn POET - PFAS

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A       Comments:

N/A





## Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks  
2355 Hill Rd.  
Fairbanks, AK 99701  
(907)479-0600

Report Number: **1220599**

Client Project: **101543-001 Gustavus POC**

Dear Kristen Freiburger,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jennifer at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

---

Jennifer Dawkins  
Project Manager  
Jennifer.Dawkins@sgs.com

Date

## Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**  
SGS Project: **1220599**  
Project Name/Site: **101543-001 Gustavus POC**  
Project Contact: **Kristen Freiburger**

Refer to sample receipt form for information on sample condition.

\*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 02/22/2022 3:31:09PM

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry (Provisionally Certified as of 2/15/2022 for 200.8 Metals) & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
PW-200	1220599001	02/08/2022	02/12/2022	Drinking Water
PW-200-F Port cancelled	1220599002	02/08/2022	02/12/2022	Drinking Water
PW-200-Sink	1220599003	02/08/2022	02/12/2022	Drinking Water

<u>Method</u>	<u>Method Description</u>
EP200.8	Metals in Water by 200.8 ICP-MS

Print Date: 02/22/2022 3:31:12PM

## Detectable Results Summary

Client Sample ID: **PW-200**

Lab Sample ID: 1220599001

**Metals by ICP/MS (Provisional Cert)**

Parameter

Arsenic

Result

20.5

Units

ug/L

Print Date: 02/22/2022 3:31:13PM

SGS North America Inc.

200 West Potter Drive, Anchorage, AK 99518  
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Member of SGS Group



**Results of PW-200**

Client Sample ID: **PW-200**  
Client Project ID: **101543-001 Gustavus POC**  
Lab Sample ID: 1220599001  
Lab Project ID: 1220599

Collection Date: 02/08/22 14:00  
Received Date: 02/12/22 13:00  
Matrix: Drinking Water  
Solids (%):  
Location:

**Results by Metals by ICP/MS (Provisional Cert)**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	20.5	5.00	1.50	ug/L	1		02/17/22 15:43

**Batch Information**

Analytical Batch: MMS11471  
Analytical Method: EP200.8  
Analyst: AKA  
Analytical Date/Time: 02/17/22 15:43  
Container ID: 1220599001-A

Prep Batch: MXX34978  
Prep Method: E200.2  
Prep Date/Time: 02/17/22 10:56  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL



**Results of PW-200-Sink**

Client Sample ID: **PW-200-Sink**  
Client Project ID: **101543-001 Gustavus POC**  
Lab Sample ID: 1220599003  
Lab Project ID: 1220599

Collection Date: 02/08/22 13:18  
Received Date: 02/12/22 13:00  
Matrix: Drinking Water  
Solids (%):  
Location:

**Results by Metals by ICP/MS (Provisional Cert)**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	2.50 U	5.00	1.50	ug/L	1		02/17/22 15:46

**Batch Information**

Analytical Batch: MMS11471  
Analytical Method: EP200.8  
Analyst: AKA  
Analytical Date/Time: 02/17/22 15:46  
Container ID: 1220599003-A

Prep Batch: MXX34978  
Prep Method: E200.2  
Prep Date/Time: 02/17/22 10:56  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL



**Method Blank**

Blank ID: MB for HBN 1831316 [MXX/34978]  
Blank Lab ID: 1654778

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1220599001, 1220599003

**Results by EP200.8**

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	2.50U	5.00	1.50	ug/L

**Batch Information**

Analytical Batch: MMS11471  
Analytical Method: EP200.8  
Instrument: P7 Agilent 7800  
Analyst: AKA  
Analytical Date/Time: 2/17/2022 2:49:36PM

Prep Batch: MXX34978  
Prep Method: E200.2  
Prep Date/Time: 2/17/2022 10:56:00AM  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 02/22/2022 3:31:16PM



## Blank Spike Summary

Blank Spike ID: LCS for HBN 1220599 [MXX34978]  
Blank Spike Lab ID: 1654779  
Date Analyzed: 02/17/2022 14:52

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1220599001, 1220599003

## Results by EP200.8

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Arsenic	1000	992	99	( 85-115 )

## Batch Information

Analytical Batch: **MMS11471**  
Analytical Method: **EP200.8**  
Instrument: **P7 Agilent 7800**  
Analyst: **AKA**

Prep Batch: **MXX34978**  
Prep Method: **E200.2**  
Prep Date/Time: **02/17/2022 10:56**  
Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL  
Dupe Init Wt./Vol.: Extract Vol:

Print Date: 02/22/2022 3:31:18PM

## Matrix Spike Summary

Original Sample ID: 1654802  
 MS Sample ID: 1654803 MS  
 MSD Sample ID:

Analysis Date: 02/17/2022 15:03  
 Analysis Date: 02/17/2022 15:05  
 Analysis Date:  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1220599001, 1220599003

## Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	2.50U	1000	987	99				70-130		

## Batch Information

Analytical Batch: MMS11471  
 Analytical Method: EP200.8  
 Instrument: P7 Agilent 7800  
 Analyst: AKA  
 Analytical Date/Time: 2/17/2022 3:05:45PM

Prep Batch: MXX34978  
 Prep Method: DW Digest for Metals on ICP-MS  
 Prep Date/Time: 2/17/2022 10:56:00AM  
 Prep Initial Wt./Vol.: 20.00mL  
 Prep Extract Vol: 50.00mL

## **Dawkins, Jennifer A (Fairbanks)**

---

**From:** Dawkins, Jennifer A (Fairbanks)  
**Sent:** Tuesday, February 22, 2022 2:05 PM  
**To:** Dawkins, Jennifer A (Fairbanks)  
**Subject:** 1220599 Change Order

Please cancel the sample on Hold, sample 2, per client.

**Jennifer A-B Dawkins**  
**Industries & Environment**  
Fairbanks Client Services  
Project Manager - Alaska  
**SGS**  
3180 Peger Rd. Ste. 190  
Fairbanks, AK 99709  
907-474-8656  
907-322-8444  
[jennifer.dawkins@sgs.com](mailto:jennifer.dawkins@sgs.com)

# 347 1280m



# CHAIN-OF-CUSTODY RECORD

Laboratory SGS Page 1 of 1  
Attn: J. Dawkins

2355 Hill Road  
Fairbanks, AK 99709  
(907) 479-0600  
www.shannonwilson.com

MSA - 565 - 2016

Quote No: \_\_\_\_\_  
J-Flags:  Yes  No

Turn Around Time:  
 Normal  Rush  
Please Specify \_\_\_\_\_

Analytical Methods (include preservative if used)

1220599



Sample Identity	Lab No.	Time	Date Sampled	Total /		Remarks/Matrix Composition/Grab? Sample Containers
PW-200		1400	2/8/22	X		groundwater as
* PW-200 - F P04 * HOLD		1328	2/8/22	X		Drinking water
PW-200 - Sink		1318	2/8/22	X		L

Total Acetic

**Project Information**

Number: 101543-001  
 Name: Gustavus P02  
 Contact: KCF  
 Ongoing Project? Yes  No   
 Sampler: ADM


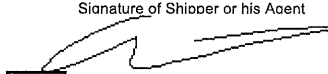
**Sample Receipt**

Total No. of Containers: 1  
 COC Seals/Intact? ONNA 1-1-1-5  
 Received Good Cond./Cold 3.34 D50  
 Temp: \_\_\_\_\_  
 Delivery Method: SGS

**Notes:**

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: _____ Printed Name: <u>A. Masters</u> Company: <u>Shannon + Wilson, Inc.</u>	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____
Time: <u>0900</u> Date: <u>2/11/22</u>	Time: _____ Date: _____	Time: _____ Date: _____
Received By: 1. Signature: _____ Printed Name: _____ Company: _____	Received By: 2. Signature: _____ Printed Name: _____ Company: _____	Received By: 3. Signature: _____ Printed Name: <u>Justin A. Nelson</u> Company: <u>SGS</u>
Time: _____ Date: _____	Time: _____ Date: _____	Time: <u>13:00</u> Date: <u>2/12/22</u>

Shipper's Name and Address Shannon and Wilson Inc 2355 Hill Rd Fairbanks, AK 99712 USA  Tel: 907-479-0600		Shipper's Account Number <b>27400200733</b>  Customer's ID Number <b>10926</b>		Not Negotiable  <b>Air Waybill</b> Issued By <div style="text-align: center;">                       Alaska                      AIR CARGO                      P.O. BOX 68900 SEATTLE, WA 98168                      800-225-2752 ALASKACARGO.COM                 </div>					
Consignee's Name and Address SGS North America 200 W Potter Drive Anchorage, AK 99518 USA  Tel: 907-562-2343		Consignee's Account Number <b>27400215947</b>		Also notify          Tel:					
Issuing Carrier's Agent and City   Agent's IATA Code Account No.				Accounting Information Shannon and Wilson Inc 2355 Hill Rd Fairbanks, AK 99712 USA  SRN/102599-019 GoldStreak					
Airport of Departure (Addr. of First Carrier) and Requested Routing <b>Juneau International Airport</b>				Declared Value For Carriage <b>NVD</b>					
To By First Carrier <b>ANC Alaska Airlines</b>		To / By	To / By	Currency <b>USD PX</b>	WT/VAL <input checked="" type="checkbox"/>	Other <input checked="" type="checkbox"/>	Declared Value For Customs <b>NCV</b>		
Airport of Destination <b>Anchorage</b>		Flight/Date <b>AS 067/11</b>	Flight/Date	Amount of Insurance <b>XXX</b>					
Handling Information STORE IN COOLER WHEN POSSIBLE NOA JUSTIN 907-550-3205 AND 907-562-2343								SCI	
No of Pieces	Gross Weight	kg	lb	Commodity Item No.	Chargeable Weight	Rate / Charge	Total	Nature and Quantity of Goods (Incl. Dimensions or Volume)	
1	41.0	L	N		41.0		AS AGREED	WATER SAMPLES KEEP COOL       Dims: 21 x 14 x13 x 1   GSX COL Volume: 2.212	
1	41.0						AS AGREED		
Prepaid Weight Charge <b>AS AGREED</b>		Collect Other Charges <b>XBC 12.50</b>							
Valuation Charge									
Tax									
Total Other Charges Due Agent		Shipper certifies that the particulars on the face hereof are correct and that insofar as any part of the consignment contains dangerous goods, such part is properly described by name and is in proper condition for carriage by air according to the applicable Dangerous Goods Regulations. I consent to the inspection of this cargo.							
Total Other Charges Due Carrier		For: Shannon and Wilson Inc Signature of Shipper or his Agent 							
Total Prepaid <b>AS AGREED</b>		Total Collect		<input checked="" type="checkbox"/> THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS				<input type="checkbox"/> THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS	
				Executed On (Date) <b>11 Feb 2022 17:15</b>				at (Place) <b>Juneau International</b>	Signature of Issuing Carrier or its Agent <b>Alaska Airlines</b>



P.O. BOX 68900 SEATTLE, WA 98168  
800-225-2752 ALASKACARGO.COM

**SHIPPER**

Shannon and Wilson Inc  
2355 Hill Rd  
Fairbanks, AK 99712

**CONSIGNEE**

SGS North America  
200 W Potter Drive  
Anchorage, AK 99518

AWB Number	Pieces	Weight	Origin / Dest	Nature of Goods	Arriving Flight Details	Customs
027-90648574	1	41.0 Lb	JNU-ANC	WATER SAMPLES	AS 067 11-Feb-2022	

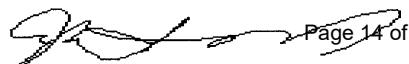
Storage Locations: GSX4 1

LOCAL CHARGES :

Bonded Warehouse

Total Local Charges:	USD	0.00
VAT 6.25%:	USD	0.00
<b>Grand Total:</b>	<b>USD</b>	<b>0.00</b>

PO Number

RECEIPT STATEMENT	
The undersigned acknowledge the receipt of above mentioned consignment complete and in good condition.	
Date: 12-Feb-2022	Registration: .....
Time: 13:03	Signature: 
Driver: Justin	Page 14 of 17



SGS Workorder #:

1220599

1220599

Review Criteria

Condition (Yes, No, N/A)

Exceptions Noted below

Chain of Custody / Temperature Requirements

N/A Exemption permitted if sampler hand carries/delivers.

Were Custody Seals intact? Note # & location

Yes 1F 1LS

COC accompanied samples?

Yes

DOD: Were samples received in COC corresponding coolers?

N/A

N/A \*\*Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required

Temperature blank compliant\* (i.e., 0-6 °C after CF)?

Yes

Cooler ID:	1	@	3.3	°C	Therm. ID:	D50
Cooler ID:		@		°C	Therm. ID:	
Cooler ID:		@		°C	Therm. ID:	
Cooler ID:		@		°C	Therm. ID:	
Cooler ID:		@		°C	Therm. ID:	

If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.

\*If >6°C, were samples collected <8 hours ago?

N/A

If <0°C, were sample containers ice free?

N/A

Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.

Holding Time / Documentation / Sample Condition Requirements

Note: Refer to form F-083 "Sample Guide" for specific holding times.

Were samples received within holding time?

Yes

Do samples match COC\*\* (i.e., sample IDs, dates/times collected)?

Yes

\*\*Note: If times differ <1hr, record details & login per COC.

\*\*\*Note: If sample information on containers differs from COC, SGS will default to COC information.

Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)

Yes

N/A \*\*\*Exemption permitted for metals (e.g.,200.8/6020B).

Were proper containers (type/mass/volume/preservative\*\*\*)used?

Yes

Volatile / LL-Hg Requirements

Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?

N/A

Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?

N/A

Were all soil VOAs field extracted with MeOH+BFB?

N/A

Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):



### Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1220599001-A	HNO3 to pH < 2	OK			
1220599002-A	HNO3 to pH < 2	OK			
1220599003-A	HNO3 to pH < 2	OK			

#### Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.



**SGS DW Chemistry Certified Analyses  
Applicable to PWSID Samples**

ADEC DW-Chemical Certificate AK00971, expires 6-30-2022

Method/ Test Name	Reference	Analyte	Method/ Test Name	Reference	Analyte
200.8	EPA	Aluminum	524.2	EPA	Benzene-R
200.8	EPA	Antimony	524.2	EPA	Bromodichloromethane-T
200.8	EPA	Arsenic	524.2	EPA	Bromoform-T
200.8	EPA	Barium	524.2	EPA	Carbon Tetrachloride-R
200.8	EPA	Beryllium	524.2	EPA	Chlorobenzene-R
200.8	EPA	Cadmium	524.2	EPA	Chloroform-T
200.8	EPA	Chromium	524.2	EPA	cis-1,2-Dichloroethylene-R
200.8	EPA	Copper	524.2	EPA	Dibromochloromethane-T
200.8	EPA	Lead	524.2	EPA	Dichloromethane (Methylene Chloride)-R
200.8	EPA	Manganese	524.2	EPA	Ethylbenzene-R
200.8	EPA	Mercury	524.2	EPA	Styrene-R
200.8	EPA	Nickel	524.2	EPA	Tetrachloroethylene-R
200.8	EPA	Selenium	524.2	EPA	Toluene-R
200.8	EPA	Silver	524.2	EPA	Total THM-T
200.8	EPA	Thallium	524.2	EPA	Total Xylenes-R
200.8	EPA	Zinc	524.2	EPA	trans-1,2 Dichloroethylene
300.0	EPA	Chloride	524.2	EPA	Trichloroethylene-R
300.0	EPA	Fluoride	524.2	EPA	Vinyl Chloride-R
300.0	EPA	Nitrate-N	2120B	SM 21st ed	Color
300.0	EPA	Nitrate-Nitrite as N	2130B	SM 21st ed	Turbidity
300.0	EPA	Nitrite-N	2320B	SM 21st ed	Alkalinity
300.0	EPA	Sulfate	2510B	SM 21st ed	Conductivity
524.2	EPA	1,1,1-Trichloroethane-R	2540C	SM 21st ed	TDS
524.2	EPA	1,1,2-Trichloroethane-R	4500-CN-C,E	SM 21st ed	Cyanide
524.2	EPA	1,1-Dichloroethylene-R	4500-H-B	SM 21st ed	pH
524.2	EPA	1,2,4-Trichlorobenzene-R	4500-NO3-F	SM 21st ed	Nitrate-N
524.2	EPA	1,2-Dichlorobenzene-R	4500-NO3-F	SM 21st ed	Nitrite-N
524.2	EPA	1,2-Dichloroethane-R	4500-P-E	SM 21st ed	Ortho-phosphate
524.2	EPA	1,2-Dichloropropane-R	5310B	SM 21st ed	Dissolved Organic Carbon (DOC)
524.2	EPA	1,4-Dichlorobenzene-R	5310B	SM 21st ed	Total Organic Carbon (TOC)

ADEC DW-Micro Certificate AK00971, expires 6-30-2022

Method/ Test Name	Reference	Analyte	Method/ Test Name	Reference	Analyte
9215 B HPC Pour Plate	SM	Heterotrophic	9223 B Colilert-18 MPN	SM	E. coli
9223 B Colilert MPN	SM	E. coli	9223 B Colilert-18 PA	SM	E. coli
9223 B Colilert PA	SM	E. coli	9223 B Colilert-18 PA	SM	Total Coliform
9223 B Colilert PA	SM	Total Coliform			

**Laboratory Data Review Checklist**

Completed By:

Amber Masters

Title:

Environmental Scientist

Date:

March 2, 2022

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS North America, Inc. (SGS)

Laboratory Report Number:

1220599

Laboratory Report Date:

March 2, 2022

CS Site Name:

DRM [REDACTED] POET - PFAS

ADEC File Number:

Hazard Identification Number:

1220599

Laboratory Report Date:

March 2, 2022

CS Site Name:

DRM Gustavus Inn POET - PFAS

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

The samples were analyzed by SGS.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

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Laboratory Report Date:

March 2, 2022

CS Site Name:

DRM Gustavus Inn POET - PFAS

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt forms note that the samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes  No  N/A  Comments:

The sample receipt forms note that the samples were received in good condition.

e. Data quality or usability affected?

Comments:

Data quality and usability are not affected.

#### 4. Case Narrative

a. Present and understandable?

Yes  No  N/A  Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

The case narrative refers to the sample receipt to discuss sample condition.

c. Were all corrective actions documented?

Yes  No  N/A  Comments:

The laboratory does not discuss any corrective actions.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The results are unaffected. See the following sections for our assessment.

1220599

Laboratory Report Date:

March 2, 2022

CS Site Name:

DRM Gustavus Inn POET - PFAS

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not included with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

e. Data quality or usability affected?

Data quality or usability are not affected.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

1220599

Laboratory Report Date:

March 2, 2022

CS Site Name:

DRM Gustavus Inn POET - PFAS

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

v. Data quality or usability affected?

Comments:

The results are unaffected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A  Comments:

Organics were not reported with this work order.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

An LCS was not reported with this analysis. We do not have a measure of precision for this analysis.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

The laboratory did not run a duplicate for the LCS sample. We do not have a measure of precision.

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Laboratory Report Date:

March 2, 2022

CS Site Name:

DRM Gustavus Inn POET - PFAS

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

No flags are required.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality or usability is not affected.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Organics were not included with this work order.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

An MSD was not reported. We do not have a measure of precision for this analysis.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A  Comments:

See above.

1220599

Laboratory Report Date:

March 2, 2022

CS Site Name:

DRM Gustavus Inn POET - PFAS

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality and usability are not affected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes  No  N/A  Comments:

Organic analyses were not included with this work order.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A  Comments:

See above.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

N/A; see above.

iv. Data quality or usability affected?

Comments:

Data quality and usability are not affected.



1220599

Laboratory Report Date:

March 2, 2022

CS Site Name:

DRM Gustavus Inn POET - PFAS

e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?  
(If not, enter explanation below.)

Yes  No  N/A  Comments:

Volatile compounds were not requested for this project. A trip blank is not required.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?  
(If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

See above.

- iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

See above.

- v. Data quality or usability affected?

Comments:

Data quality and usability are not affected.

f. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

Field duplicates are not submitted for this project task.

- ii. Submitted blind to lab?

Yes  No  N/A  Comments:

See above.

1220599

Laboratory Report Date:

March 2, 2022

CS Site Name:

DRM Gustavus Inn POET - PFAS

iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where  $R_1$  = Sample Concentration  
 $R_2$  = Field Duplicate Concentration

Yes  No  N/A  Comments:

See above.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality and usability are not affected.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

The sample was not collected with reusable equipment; therefore, an equipment blank is not necessary.

i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; see above.

iii. Data quality or usability affected?

Comments:

Data quality and usability are not affected.

1220599

Laboratory Report Date:

March 2, 2022

CS Site Name:

DRM Gustavus Inn POET - PFAS

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A       Comments:

N/A



## Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks  
2355 Hill Rd  
Fairbanks, AK 99707  
(907)479-0600

Report Number: **1221942**

Client Project: **101543-001 Gus Resid. PFAS**

Dear Kristen Freiburger,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jennifer at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

---

Jennifer Dawkins  
Project Manager  
Jennifer.Dawkins@sgs.com

Date

## Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**  
SGS Project: **1221942**  
Project Name/Site: **101543-001 Gus Resid. PFAS**  
Project Contact: **Kristen Freiburger**

Refer to sample receipt form for information on sample condition.

\*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 05/16/2022 1:32:47PM

### Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

## Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
PW-200-SINK	1221942001	04/27/2022	05/02/2022	Drinking Water
PW-200	1221942002	04/27/2022	05/02/2022	Drinking Water
PW-200-FPort	1221942003	04/27/2022	05/02/2022	Drinking Water

<u>Method</u>	<u>Method Description</u>
EP200.8	Metals in Water by ICP-MS

Print Date: 05/16/2022 1:32:51PM

## Detectable Results Summary

Client Sample ID: **PW-200**  
Lab Sample ID: 1221942002

### Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	31.3	ug/L

Print Date: 05/16/2022 1:32:52PM

SGS North America Inc.

200 West Potter Drive, Anchorage, AK 99518  
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Member of SGS Group



## Results of PW-200-SINK

Client Sample ID: **PW-200-SINK**  
 Client Project ID: **101543-001 Gus Resid. PFAS**  
 Lab Sample ID: 1221942001  
 Lab Project ID: 1221942

Collection Date: 04/27/22 12:36  
 Received Date: 05/02/22 08:20  
 Matrix: Drinking Water  
 Solids (%):  
 Location:

## Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	2.50 U	5.00	1.50	ug/L	1	(<10)	05/12/22 18:43

## Batch Information

Analytical Batch: MMS11551  
 Analytical Method: EP200.8  
 Analyst: DSD  
 Analytical Date/Time: 05/12/22 18:43  
 Container ID: 1221942001-A

Prep Batch: MXX35104  
 Prep Method: E200.2  
 Prep Date/Time: 05/12/22 08:33  
 Prep Initial Wt./Vol.: 20 mL  
 Prep Extract Vol: 50 mL

## Results of PW-200

Client Sample ID: **PW-200**  
 Client Project ID: **101543-001 Gus Resid. PFAS**  
 Lab Sample ID: 1221942002  
 Lab Project ID: 1221942

Collection Date: 04/27/22 13:28  
 Received Date: 05/02/22 08:20  
 Matrix: Drinking Water  
 Solids (%):  
 Location:

## Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	31.3 *	5.00	1.50	ug/L	1	(<10)	05/12/22 18:00

## Batch Information

Analytical Batch: MMS11551  
 Analytical Method: EP200.8  
 Analyst: DSD  
 Analytical Date/Time: 05/12/22 18:00  
 Container ID: 1221942002-A

Prep Batch: MXX35104  
 Prep Method: E200.2  
 Prep Date/Time: 05/12/22 08:33  
 Prep Initial Wt./Vol.: 20 mL  
 Prep Extract Vol: 50 mL

## Method Blank

Blank ID: MB for HBN 1836073 [MXX/35104]

Blank Lab ID: 1663599

QC for Samples:

1221942001, 1221942002

Matrix: Water (Surface, Eff., Ground)

## Results by EP200.8

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	2.50U	5.00	1.50	ug/L

## Batch Information

Analytical Batch: MMS11551

Analytical Method: EP200.8

Instrument: P7 Agilent 7800

Analyst: DSD

Analytical Date/Time: 5/12/2022 5:41:29PM

Prep Batch: MXX35104

Prep Method: E200.2

Prep Date/Time: 5/12/2022 8:33:04AM

Prep Initial Wt./Vol.: 20 mL

Prep Extract Vol: 50 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1221942 [MXX35104]  
 Blank Spike Lab ID: 1663600  
 Date Analyzed: 05/12/2022 17:44

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1221942001, 1221942002

## Results by EP200.8

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Arsenic	1000	978	98	( 85-115 )

## Batch Information

Analytical Batch: **MMS11551**  
 Analytical Method: **EP200.8**  
 Instrument: **P7 Agilent 7800**  
 Analyst: **DSD**

Prep Batch: **MXX35104**  
 Prep Method: **E200.2**  
 Prep Date/Time: **05/12/2022 08:33**  
 Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL  
 Dupe Init Wt./Vol.: Extract Vol:

## Matrix Spike Summary

Original Sample ID: 1661896  
 MS Sample ID: 1663602 MS  
 MSD Sample ID:

Analysis Date: 05/12/2022 18:00  
 Analysis Date: 05/12/2022 18:03  
 Analysis Date:  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1221942001, 1221942002

## Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	31.3	1000	991	96				70-130		

## Batch Information

Analytical Batch: MMS11551  
 Analytical Method: EP200.8  
 Instrument: P7 Agilent 7800  
 Analyst: DSD  
 Analytical Date/Time: 5/12/2022 6:03:00PM

Prep Batch: MX35104  
 Prep Method: DW Digest for Metals on ICP-MS  
 Prep Date/Time: 5/12/2022 8:33:04AM  
 Prep Initial Wt./Vol.: 20.00mL  
 Prep Extract Vol: 50.00mL

Print Date: 05/16/2022 1:33:00PM

## Matrix Spike Summary

Original Sample ID: 1663598  
 MS Sample ID: 1663603 MS  
 MSD Sample ID:

Analysis Date: 05/12/2022 17:49  
 Analysis Date: 05/12/2022 17:52  
 Analysis Date:  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1221942001, 1221942002

## Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	2.50U	1000	978	98				70-130		

## Batch Information

Analytical Batch: MMS11551  
 Analytical Method: EP200.8  
 Instrument: P7 Agilent 7800  
 Analyst: DSD  
 Analytical Date/Time: 5/12/2022 5:52:00PM

Prep Batch: MX35104  
 Prep Method: DW Digest for Metals on ICP-MS  
 Prep Date/Time: 5/12/2022 8:33:04AM  
 Prep Initial Wt./Vol.: 20.00mL  
 Prep Extract Vol: 50.00mL

Print Date: 05/16/2022 1:33:00PM

## Dawkins, Jennifer A (Fairbanks)

---

**From:** Kristen Freiburger <Kristen.Freiburger@shanwil.com>  
**Sent:** Sunday, May 15, 2022 9:40 AM  
**To:** Dawkins, Jennifer A (Fairbanks)  
**Subject:** [EXTERNAL] RE: 1221942

**\*\*\* WARNING: this message is from an EXTERNAL SENDER. Please be cautious, particularly with links and attachments. \*\*\***

---

What were the results? If the results were ND for the *PW-200-sink* sample, then you can finalize the report without running the on hold samples.

Thanks,  
Kristen

Kristen Freiburger | she/her

ASSOCIATE | ENVIRONMENTAL GROUP LEADER



Office: (907) 458-3146

---

**From:** Dawkins, Jennifer A (Fairbanks) <Jennifer.Dawkins@sgs.com>  
**Sent:** Friday, May 13, 2022 4:31 PM  
**To:** Kristen Freiburger <Kristen.Freiburger@shanwil.com>  
**Subject:** 1221942

Kristen, your As samples are final. Let me know if you need to run the sample on Hold?  
Thanks,  
Jen

Jennifer A-B Dawkins  
907-322-8444

Available by text as well.

Information in this email and any attachments is confidential and intended solely for the use of the individual(s) to whom it is addressed or otherwise directed. Please note that any views or opinions presented in this email are solely those of the author and do not necessarily represent those of the Company. Finally, the recipient should check this email and any attachments for the presence of viruses. The Company accepts no liability for any damage caused by any virus transmitted by this email. All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at <https://www.sgs.com/en/terms-and-conditions>






421  
712P

027 JNU 9210 0540

*Wooler*

027-9210 0540

Shipper's Name and Address <b>Shannon and Wilson Inc</b> 2355 Hill Rd Fairbanks, AK 99712 USA Tel: 907-479-0600		Shipper's Account Number <b>27400200733</b> Customer's ID Number <b>10926</b>	Not Negotiable <b>Air Waybill</b> Issued By  P.O. BOX 68900 SEATTLE, WA 98168 800-225-2752 ALASKACARGO.COM
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Consignee's Name and Address <b>SGS North America</b> 200 W Potter Drive Anchorage, AK 99518 USA Tel: 907-562-2343	Consignee's Account Number <b>27400215947</b>	Also notify Tel:
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Issuing Carrier's Agent and City  Agent's IATA Code  Account No.	Accounting Information <b>Shannon and Wilson Inc</b> 2355 Hill Rd Fairbanks, AK 99712 USA SRN/102599 GoldStreak	10926
Airport of Departure (Addr. of First Carrier) and Requested Routing <b>Juneau International Airport</b>		

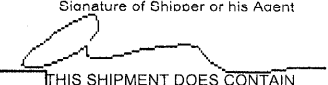
To By First Carrier <b>ANC Alaska Airlines</b>	To / By	To / By	Currency <b>USD PX</b>	WTV/AL <b>X</b>	Other <b>X</b>	Declared Value For Carriage <b>NVD</b>	Declared Value For Customs <b>NCV</b>
Airport of Destination <b>Anchorage</b>	Flight/Date <b>AS 421/29</b>	Flight/Date	Amount of Insurance <b>XXX</b>				

Handling Information

**STORE IN COOLER WHEN POSSIBLE**

SCI

No of Pieces	Gross Weight	kg	lb	Commodity Item No.	Chargeable Weight	Rate / Charge	Total	Nature and Quantity of Goods (Incl. Dimensions or Volume)
1	32.0	L	N		32.0		AS AGREED	WATER SAMPLES KEEP COOL  Dims: 24 x 13 x14 x 1  GSX COL
1	32.0						AS AGREED	Volume: 2.528

Prepaid <b>AS AGREED</b>	Weight Charge  Valuation Charge  Tax  Total Other Charges Due Agent  Total Other Charges Due Carrier  Total Prepaid <b>AS AGREED</b>	Collect  XBC 12.50  Shipper certifies that the particulars on the face hereof are correct and that insofar as any part of the consignment contains dangerous goods, such part is properly described by name and is in proper condition for carriage by air according to the applicable Dangerous Goods Regulations. I consent to the inspection of this cargo. For: Shannon and Wilson Inc Signature of Shipper or his Agent  <input checked="" type="checkbox"/> THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS <input type="checkbox"/> THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS Total Collect
		Executed On (Date) <b>29 Apr 2022 16:16</b>
		at (Place) <b>Juneau International</b>
		Signature of Issuing Carrier or its Agent <b>Alaska Airlines</b>



SGS Workorder #:

1221942

1221942

**Review Criteria**

Condition (Yes, No, N/A)

**Exceptions Noted below**

**Chain of Custody / Temperature Requirements**

*Note: Temperature and COC seal information is found on the chain of custody form*

DOD only: Did all sample coolers have a corresponding COC?  
 If <0°C, were sample containers ice free?  
 Note containers received with ice:

N/A  
 N/A

Identify any containers received at non-compliant temperature:  
 (Use form FS-0029 if more space is needed)

**Holding Time / Documentation / Sample Condition Requirements**

*Note: Refer to form F-083 "Sample Guide" for specific holding times and sample containers.*

Were samples received within analytical holding time?  
 Do sample labels match COC? Record discrepancies.

Yes  
 Yes

**Note:** If information on containers differs from COC, default to COC information for login. If times differ <1hr, record details & login per COC.

Were analytical requests clear?  
 (i.e. method is specified for analyses with multiple option for method  
 (Eg, BTEX 8021 vs 8260, Metals 6020 vs 200.8)

Yes

Were proper containers (type/mass/volume/preservative) used?  
 Note: Exemption for metals analysis by 200.8/6020 in water.

Yes

**Volatile Analysis Requirements (VOC, GRO, LL-Hg, etc.)**

Were all soil VOAs received with a corresponding % solids container?  
 Were Trip Blanks (e.g., VOAs, LL-Hg) in cooler with samples?  
 Were all water VOA vials free of headspace (e.g., bubbles ≤ 6mm)?  
 Were all soil VOAs field extracted with Methanol+BFB?

N/A  
 N/A  
 N/A  
 N/A

**Note to Client:** Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

**Additional notes (if applicable):**



## Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1221942001-A	HNO3 to pH < 2	OK			
1221942002-A	HNO3 to pH < 2	OK			
1221942003-A	HNO3 to pH < 2	OK			

### Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

**SGS DW Chemistry Certified Analyses  
Applicable to PWSID Samples**

ADEC DW-Chemical Certificate AK00971, expires 6-30-2022

Method/ Test Name	Reference	Analyte	Method/ Test Name	Reference	Analyte
200.8	EPA	Aluminum	524.2	EPA	Benzene-R
200.8	EPA	Antimony	524.2	EPA	Bromodichloromethane-T
200.8	EPA	Arsenic	524.2	EPA	Bromoform-T
200.8	EPA	Barium	524.2	EPA	Carbon Tetrachloride-R
200.8	EPA	Beryllium	524.2	EPA	Chlorobenzene-R
200.8	EPA	Cadmium	524.2	EPA	Chloroform-T
200.8	EPA	Chromium	524.2	EPA	cis-1,2-Dichloroethylene-R
200.8	EPA	Copper	524.2	EPA	Dibromochloromethane-T
200.8	EPA	Lead	524.2	EPA	Dichloromethane (Methylene Chloride)-R
200.8	EPA	Manganese	524.2	EPA	Ethylbenzene-R
200.8	EPA	Mercury	524.2	EPA	Styrene-R
200.8	EPA	Nickel	524.2	EPA	Tetrachloroethylene-R
200.8	EPA	Selenium	524.2	EPA	Toluene-R
200.8	EPA	Silver	524.2	EPA	Total THM-T
200.8	EPA	Thallium	524.2	EPA	Total Xylenes-R
200.8	EPA	Zinc	524.2	EPA	trans-1,2 Dichloroethylene
300.0	EPA	Chloride	524.2	EPA	Trichloroethylene-R
300.0	EPA	Fluoride	524.2	EPA	Vinyl Chloride-R
300.0	EPA	Nitrate-N	2120B	SM 21st ed	Color
300.0	EPA	Nitrate-Nitrite as N	2130B	SM 21st ed	Turbidity
300.0	EPA	Nitrite-N	2320B	SM 21st ed	Alkalinity
300.0	EPA	Sulfate	2510B	SM 21st ed	Conductivity
524.2	EPA	1,1,1-Trichloroethane-R	2540C	SM 21st ed	TDS
524.2	EPA	1,1,2-Trichloroethane-R	4500-CN-C,E	SM 21st ed	Cyanide
524.2	EPA	1,1-Dichloroethylene-R	4500-H-B	SM 21st ed	pH
524.2	EPA	1,2,4-Trichlorobenzene-R	4500-NO3-F	SM 21st ed	Nitrate-N
524.2	EPA	1,2-Dichlorobenzene-R	4500-NO3-F	SM 21st ed	Nitrite-N
524.2	EPA	1,2-Dichloroethane-R	4500-P-E	SM 21st ed	Ortho-phosphate
524.2	EPA	1,2-Dichloropropane-R	5310B	SM 21st ed	Dissolved Organic Carbon (DOC)
524.2	EPA	1,4-Dichlorobenzene-R	5310B	SM 21st ed	Total Organic Carbon (TOC)

ADEC DW-Micro Certificate AK00971, expires 6-30-2022

Method/ Test Name	Reference	Analyte	Method/ Test Name	Reference	Analyte
9215 B HPC Pour Plate	SM	Heterotrophic	9223 B Colilert-18 MPN	SM	E. coli
9223 B Colilert MPN	SM	E. coli	9223 B Colilert-18 PA	SM	E. coli
9223 B Colilert PA	SM	E. coli	9223 B Colilert-18 PA	SM	Total Coliform
9223 B Colilert PA	SM	Total Coliform			

**Laboratory Data Review Checklist**

Completed By:

Mason Craker

Title:

Geologist

Date:

May 18, 2022

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS North America, Inc. (SGS)

Laboratory Report Number:

1221942

Laboratory Report Date:

May 16, 2022

CS Site Name:

DRM [REDACTED] POET - PFAS

ADEC File Number:

Hazard Identification Number:

1221942

Laboratory Report Date:

May 16, 2022

CS Site Name:

DRM Gustavus Inn POET - PFAS

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

The samples were analyzed by SGS.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

1221942

Laboratory Report Date:

May 16, 2022

CS Site Name:

DRM Gustavus Inn POET - PFAS

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt forms note that the samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes  No  N/A  Comments:

The sample receipt forms note that the samples were received in good condition.

e. Data quality or usability affected?

Comments:

Data quality and usability are not affected.

#### 4. Case Narrative

a. Present and understandable?

Yes  No  N/A  Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

The case narrative refers to the sample receipt to discuss sample condition.

c. Were all corrective actions documented?

Yes  No  N/A  Comments:

The laboratory does not discuss any corrective actions.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The results are unaffected. See the following sections for our assessment.



1221942

Laboratory Report Date:

May 16, 2022

CS Site Name:

DRM Gustavus Inn POET - PFAS

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not included with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

e. Data quality or usability affected?

Data quality or usability are not affected.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

1221942

Laboratory Report Date:

May 16, 2022

CS Site Name:

DRM Gustavus Inn POET - PFAS

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

v. Data quality or usability affected?

Comments:

The results are unaffected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A  Comments:

Organics were not reported with this work order.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

An LCSD or sample duplicate were not reported with this analysis. We do not have a measure of precision for this analysis.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

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May 16, 2022

CS Site Name:

DRM Gustavus Inn POET - PFAS

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

The laboratory did not run a duplicate for the LCS sample. We do not have a measure of precision.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

No flags are required.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality or usability is not affected.

- c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

- i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Organics were not included with this work order.

- ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

An MSD was not reported. We do not have a measure of precision for this analysis.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

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Laboratory Report Date:

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CS Site Name:

DRM Gustavus Inn POET - PFAS

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A  Comments:

See above.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; see above.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality and usability are not affected.

- d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes  No  N/A  Comments:

Organic analyses were not included with this work order.

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A  Comments:

See above.

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

N/A; see above.

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iv. Data quality or usability affected?

Comments:

Data quality and usability are not affected.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?  
(If not, enter explanation below.)

Yes  No  N/A  Comments:

Volatile compounds were not requested for this project. A trip blank is not required.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?  
(If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

See above.

iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

See above.

v. Data quality or usability affected?

Comments:

Data quality and usability are not affected.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

Field duplicates are not submitted for this project task.

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ii. Submitted blind to lab?

Yes  No  N/A  Comments:

See above.

iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where  $R_1$  = Sample Concentration  
 $R_2$  = Field Duplicate Concentration

Yes  No  N/A  Comments:

See above.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality and usability are not affected.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

The sample was not collected with reusable equipment; therefore, an equipment blank is not necessary.

i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; see above.

iii. Data quality or usability affected?

Comments:

Data quality and usability are not affected.

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CS Site Name:

DRM Gustavus Inn POET - PFAS

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A       Comments:

N/A

## ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

Laboratory Job ID: 320-78303-1  
Client Project/Site: GST MWs

**For:**

Shannon & Wilson, Inc  
2355 Hill Rd.  
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger



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Authorized for release by:  
9/15/2021 2:50:51 PM

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### LINKS

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*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*





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# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

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## Job ID: 320-78303-1

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### Laboratory: Eurofins TestAmerica, Sacramento

#### Narrative

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#### Job Narrative 320-78303-1

#### Receipt

The samples were received on 8/31/2021 3:39 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.9° C.

#### LCMS

Method EPA 537(Mod): Some results for samples MW-2-20 (320-78303-4) and MW-102-20 (320-78303-5) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgement was used to positively identify the analyte. MW-3-15 (320-78303-8) and MW-4-20 (320-78303-11)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-521959.

Method 3535: The following samples contained floating particulates in the sample bottle prior to extraction: MW-1-40 (320-78303-2), MW-103-40 (320-78303-7), MW-3-15 (320-78303-8), MW-6-20 (320-78303-9), MW-7-20 (320-78303-10) and MW-4-20 (320-78303-11).

Method 3535: The following samples were slightly yellow prior to extraction: MW-1-40 (320-78303-2), MW-3-40 (320-78303-6), MW-103-40 (320-78303-7), MW-3-15 (320-78303-8), MW-7-20 (320-78303-10) and MW-4-20 (320-78303-11).

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-521960.

Method 3535: The following samples contained floating particulates in the sample bottle prior to extraction: MW-8-20 (320-78303-13), MW-10-20 (320-78303-14), MW-9-30 (320-78303-15), MW-109-30 (320-78303-16) and EB-12-10 (320-78303-20).

Method 3535: The following samples were yellow prior to extraction: MW-8-20 (320-78303-13), MW-10-20 (320-78303-14), MW-9-30 (320-78303-15), MW-109-30 (320-78303-16), MW-12-10 (320-78303-18) and MW-112-10 (320-78303-19).

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-523724.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

## Client Sample ID: MW-1-15

## Lab Sample ID: 320-78303-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.69	J	1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-1-40

## Lab Sample ID: 320-78303-2

No Detections.

## Client Sample ID: MW-2-30

## Lab Sample ID: 320-78303-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	1.4	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-2-20

## Lab Sample ID: 320-78303-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	64		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	39		1.8	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	35		1.8	0.76	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	9.0		1.8	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.2		1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	41		1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	520		9.0	2.4	ng/L	5		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-102-20

## Lab Sample ID: 320-78303-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	67		1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	39		1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	36		1.8	0.78	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	9.8		1.8	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.79	J	1.8	0.28	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.2		1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	41		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	520		9.1	2.5	ng/L	5		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-3-40

## Lab Sample ID: 320-78303-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.4	J	1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.2	J	1.8	0.78	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	13		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	14		1.8	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-103-40

## Lab Sample ID: 320-78303-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.4	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.3	J	1.9	0.79	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	14		1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	14		1.9	0.50	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

## Client Sample ID: MW-3-15

## Lab Sample ID: 320-78303-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.23	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.1	J I	1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.8		1.8	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-6-20

## Lab Sample ID: 320-78303-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.69	J	1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-7-20

## Lab Sample ID: 320-78303-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.9		1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.75	J	1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	3.4		1.8	0.77	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.0	J	1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	13		1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-4-20

## Lab Sample ID: 320-78303-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.64	J I	1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-5-20

## Lab Sample ID: 320-78303-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.68	J	1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.3	J	1.8	0.78	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.50	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.92	J	1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.7		1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-8-20

## Lab Sample ID: 320-78303-13

No Detections.

## Client Sample ID: MW-10-20

## Lab Sample ID: 320-78303-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	15		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.3		1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.1		1.8	0.77	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.3	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	19		1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	91		1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-9-30

## Lab Sample ID: 320-78303-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	5.5		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.9		1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.2	J	1.9	0.80	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.96	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.6		1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	43		1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

## Client Sample ID: MW-109-30

## Lab Sample ID: 320-78303-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	5.3		1.8	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.8		1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	0.95	J	1.8	0.78	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.74	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	9.8		1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	42		1.8	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-11-15

## Lab Sample ID: 320-78303-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	53		1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	13		1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	5.4		1.8	0.78	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	1.3	J	1.8	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	1.7	J	1.8	0.29	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	11		1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	44		1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	59		1.8	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-12-10

## Lab Sample ID: 320-78303-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.8		1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.9		1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.0		1.8	0.78	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.55	J	1.8	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.21	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.2		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	36		1.8	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-112-10

## Lab Sample ID: 320-78303-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.8		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.3		1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.9		1.8	0.77	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.55	J	1.8	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.50	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	11		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	100		1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: EB-12-10

## Lab Sample ID: 320-78303-20

No Detections.

## Client Sample ID: GAC

## Lab Sample ID: 320-78303-21

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

**Client Sample ID: MW-1-15**

**Lab Sample ID: 320-78303-1**

**Date Collected: 08/23/21 12:49**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		09/02/21 04:44	09/10/21 21:34	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		09/02/21 04:44	09/10/21 21:34	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		09/02/21 04:44	09/10/21 21:34	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		09/02/21 04:44	09/10/21 21:34	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/02/21 04:44	09/10/21 21:34	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		09/02/21 04:44	09/10/21 21:34	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		09/02/21 04:44	09/10/21 21:34	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/02/21 04:44	09/10/21 21:34	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		09/02/21 04:44	09/10/21 21:34	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		09/02/21 04:44	09/10/21 21:34	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.69</b>	<b>J</b>	1.8	0.51	ng/L		09/02/21 04:44	09/10/21 21:34	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		09/02/21 04:44	09/10/21 21:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		09/02/21 04:44	09/10/21 21:34	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		09/02/21 04:44	09/10/21 21:34	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/02/21 04:44	09/10/21 21:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		09/02/21 04:44	09/10/21 21:34	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/02/21 04:44	09/10/21 21:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		09/02/21 04:44	09/10/21 21:34	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	84		50 - 150	09/02/21 04:44	09/10/21 21:34	1
13C4 PFHpA	86		50 - 150	09/02/21 04:44	09/10/21 21:34	1
13C4 PFOA	95		50 - 150	09/02/21 04:44	09/10/21 21:34	1
13C5 PFNA	87		50 - 150	09/02/21 04:44	09/10/21 21:34	1
13C2 PFDA	90		50 - 150	09/02/21 04:44	09/10/21 21:34	1
13C2 PFUnA	87		50 - 150	09/02/21 04:44	09/10/21 21:34	1
13C2 PFDoA	92		50 - 150	09/02/21 04:44	09/10/21 21:34	1
13C2 PFTeDA	90		50 - 150	09/02/21 04:44	09/10/21 21:34	1
13C3 PFBS	87		50 - 150	09/02/21 04:44	09/10/21 21:34	1
18O2 PFHxS	98		50 - 150	09/02/21 04:44	09/10/21 21:34	1
13C4 PFOS	85		50 - 150	09/02/21 04:44	09/10/21 21:34	1
d3-NMeFOSAA	82		50 - 150	09/02/21 04:44	09/10/21 21:34	1
d5-NEtFOSAA	90		50 - 150	09/02/21 04:44	09/10/21 21:34	1
13C3 HFPO-DA	91		50 - 150	09/02/21 04:44	09/10/21 21:34	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

**Client Sample ID: MW-1-40**

**Lab Sample ID: 320-78303-2**

**Date Collected: 08/23/21 13:54**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.54	ng/L		09/02/21 04:44	09/10/21 21:43	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		09/02/21 04:44	09/10/21 21:43	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.79	ng/L		09/02/21 04:44	09/10/21 21:43	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		09/02/21 04:44	09/10/21 21:43	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		09/02/21 04:44	09/10/21 21:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		09/02/21 04:44	09/10/21 21:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		09/02/21 04:44	09/10/21 21:43	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/02/21 04:44	09/10/21 21:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		09/02/21 04:44	09/10/21 21:43	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		09/02/21 04:44	09/10/21 21:43	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.53	ng/L		09/02/21 04:44	09/10/21 21:43	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		09/02/21 04:44	09/10/21 21:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/02/21 04:44	09/10/21 21:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/02/21 04:44	09/10/21 21:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/02/21 04:44	09/10/21 21:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/02/21 04:44	09/10/21 21:43	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.30	ng/L		09/02/21 04:44	09/10/21 21:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		09/02/21 04:44	09/10/21 21:43	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	75		50 - 150	09/02/21 04:44	09/10/21 21:43	1
13C4 PFHpA	69		50 - 150	09/02/21 04:44	09/10/21 21:43	1
13C4 PFOA	91		50 - 150	09/02/21 04:44	09/10/21 21:43	1
13C5 PFNA	77		50 - 150	09/02/21 04:44	09/10/21 21:43	1
13C2 PFDA	86		50 - 150	09/02/21 04:44	09/10/21 21:43	1
13C2 PFUnA	76		50 - 150	09/02/21 04:44	09/10/21 21:43	1
13C2 PFDoA	82		50 - 150	09/02/21 04:44	09/10/21 21:43	1
13C2 PFTeDA	85		50 - 150	09/02/21 04:44	09/10/21 21:43	1
13C3 PFBS	68		50 - 150	09/02/21 04:44	09/10/21 21:43	1
18O2 PFHxS	81		50 - 150	09/02/21 04:44	09/10/21 21:43	1
13C4 PFOS	70		50 - 150	09/02/21 04:44	09/10/21 21:43	1
d3-NMeFOSAA	70		50 - 150	09/02/21 04:44	09/10/21 21:43	1
d5-NEtFOSAA	80		50 - 150	09/02/21 04:44	09/10/21 21:43	1
13C3 HFPO-DA	73		50 - 150	09/02/21 04:44	09/10/21 21:43	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

**Client Sample ID: MW-2-30**

**Lab Sample ID: 320-78303-3**

**Date Collected: 08/23/21 15:20**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		09/02/21 04:44	09/10/21 21:53	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		09/02/21 04:44	09/10/21 21:53	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		09/02/21 04:44	09/10/21 21:53	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		09/02/21 04:44	09/10/21 21:53	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/02/21 04:44	09/10/21 21:53	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		09/02/21 04:44	09/10/21 21:53	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		09/02/21 04:44	09/10/21 21:53	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/02/21 04:44	09/10/21 21:53	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		09/02/21 04:44	09/10/21 21:53	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>1.4</b>	<b>J</b>	1.8	0.18	ng/L		09/02/21 04:44	09/10/21 21:53	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		09/02/21 04:44	09/10/21 21:53	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		09/02/21 04:44	09/10/21 21:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/02/21 04:44	09/10/21 21:53	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/02/21 04:44	09/10/21 21:53	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/02/21 04:44	09/10/21 21:53	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/02/21 04:44	09/10/21 21:53	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/02/21 04:44	09/10/21 21:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		09/02/21 04:44	09/10/21 21:53	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	73		50 - 150	09/02/21 04:44	09/10/21 21:53	1
13C4 PFHpA	72		50 - 150	09/02/21 04:44	09/10/21 21:53	1
13C4 PFOA	95		50 - 150	09/02/21 04:44	09/10/21 21:53	1
13C5 PFNA	80		50 - 150	09/02/21 04:44	09/10/21 21:53	1
13C2 PFDA	88		50 - 150	09/02/21 04:44	09/10/21 21:53	1
13C2 PFUnA	78		50 - 150	09/02/21 04:44	09/10/21 21:53	1
13C2 PFDoA	88		50 - 150	09/02/21 04:44	09/10/21 21:53	1
13C2 PFTeDA	89		50 - 150	09/02/21 04:44	09/10/21 21:53	1
13C3 PFBS	65		50 - 150	09/02/21 04:44	09/10/21 21:53	1
18O2 PFHxS	91		50 - 150	09/02/21 04:44	09/10/21 21:53	1
13C4 PFOS	77		50 - 150	09/02/21 04:44	09/10/21 21:53	1
d3-NMeFOSAA	75		50 - 150	09/02/21 04:44	09/10/21 21:53	1
d5-NEtFOSAA	77		50 - 150	09/02/21 04:44	09/10/21 21:53	1
13C3 HFPO-DA	77		50 - 150	09/02/21 04:44	09/10/21 21:53	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

**Client Sample ID: MW-2-20**

**Lab Sample ID: 320-78303-4**

Date Collected: 08/23/21 15:51

Matrix: Water

Date Received: 08/31/21 15:39

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	64		1.8	0.52	ng/L		09/02/21 04:44	09/10/21 23:36	1
Perfluoroheptanoic acid (PFHpA)	39		1.8	0.22	ng/L		09/02/21 04:44	09/10/21 23:36	1
Perfluorooctanoic acid (PFOA)	35		1.8	0.76	ng/L		09/02/21 04:44	09/10/21 23:36	1
Perfluorononanoic acid (PFNA)	9.0		1.8	0.24	ng/L		09/02/21 04:44	09/10/21 23:36	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/02/21 04:44	09/10/21 23:36	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		09/02/21 04:44	09/10/21 23:36	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		09/02/21 04:44	09/10/21 23:36	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/02/21 04:44	09/10/21 23:36	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		09/02/21 04:44	09/10/21 23:36	1
Perfluorobutanesulfonic acid (PFBS)	2.2		1.8	0.18	ng/L		09/02/21 04:44	09/10/21 23:36	1
Perfluorohexanesulfonic acid (PFHxS)	41		1.8	0.51	ng/L		09/02/21 04:44	09/10/21 23:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		09/02/21 04:44	09/10/21 23:36	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		09/02/21 04:44	09/10/21 23:36	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		09/02/21 04:44	09/10/21 23:36	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		09/02/21 04:44	09/10/21 23:36	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/02/21 04:44	09/10/21 23:36	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		09/02/21 04:44	09/10/21 23:36	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	80		50 - 150	09/02/21 04:44	09/10/21 23:36	1
13C4 PFHpA	81		50 - 150	09/02/21 04:44	09/10/21 23:36	1
13C4 PFOA	94		50 - 150	09/02/21 04:44	09/10/21 23:36	1
13C5 PFNA	82		50 - 150	09/02/21 04:44	09/10/21 23:36	1
13C2 PFDA	86		50 - 150	09/02/21 04:44	09/10/21 23:36	1
13C2 PFUnA	86		50 - 150	09/02/21 04:44	09/10/21 23:36	1
13C2 PFDoA	90		50 - 150	09/02/21 04:44	09/10/21 23:36	1
13C2 PFTeDA	89		50 - 150	09/02/21 04:44	09/10/21 23:36	1
13C3 PFBS	77		50 - 150	09/02/21 04:44	09/10/21 23:36	1
18O2 PFHxS	92		50 - 150	09/02/21 04:44	09/10/21 23:36	1
13C4 PFOS	78		50 - 150	09/02/21 04:44	09/10/21 23:36	1
d3-NMeFOSAA	82		50 - 150	09/02/21 04:44	09/10/21 23:36	1
d5-NEtFOSAA	85		50 - 150	09/02/21 04:44	09/10/21 23:36	1
13C3 HFPO-DA	80		50 - 150	09/02/21 04:44	09/10/21 23:36	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	520		9.0	2.4	ng/L		09/02/21 04:44	09/10/21 23:17	5

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	81		50 - 150	09/02/21 04:44	09/10/21 23:17	5

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

**Client Sample ID: MW-102-20**

**Lab Sample ID: 320-78303-5**

Date Collected: 08/23/21 15:41

Matrix: Water

Date Received: 08/31/21 15:39

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	67		1.8	0.53	ng/L		09/02/21 04:44	09/10/21 23:46	1
Perfluoroheptanoic acid (PFHpA)	39		1.8	0.23	ng/L		09/02/21 04:44	09/10/21 23:46	1
Perfluorooctanoic acid (PFOA)	36		1.8	0.78	ng/L		09/02/21 04:44	09/10/21 23:46	1
Perfluorononanoic acid (PFNA)	9.8		1.8	0.25	ng/L		09/02/21 04:44	09/10/21 23:46	1
Perfluorodecanoic acid (PFDA)	0.79	J	1.8	0.28	ng/L		09/02/21 04:44	09/10/21 23:46	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		09/02/21 04:44	09/10/21 23:46	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		09/02/21 04:44	09/10/21 23:46	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/02/21 04:44	09/10/21 23:46	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		09/02/21 04:44	09/10/21 23:46	1
Perfluorobutanesulfonic acid (PFBS)	2.2		1.8	0.18	ng/L		09/02/21 04:44	09/10/21 23:46	1
Perfluorohexanesulfonic acid (PFHxS)	41		1.8	0.52	ng/L		09/02/21 04:44	09/10/21 23:46	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/02/21 04:44	09/10/21 23:46	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/02/21 04:44	09/10/21 23:46	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/02/21 04:44	09/10/21 23:46	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/02/21 04:44	09/10/21 23:46	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/02/21 04:44	09/10/21 23:46	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		09/02/21 04:44	09/10/21 23:46	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	77		50 - 150	09/02/21 04:44	09/10/21 23:46	1
13C4 PFHpA	80		50 - 150	09/02/21 04:44	09/10/21 23:46	1
13C4 PFOA	95		50 - 150	09/02/21 04:44	09/10/21 23:46	1
13C5 PFNA	78		50 - 150	09/02/21 04:44	09/10/21 23:46	1
13C2 PFDA	88		50 - 150	09/02/21 04:44	09/10/21 23:46	1
13C2 PFUnA	87		50 - 150	09/02/21 04:44	09/10/21 23:46	1
13C2 PFDoA	87		50 - 150	09/02/21 04:44	09/10/21 23:46	1
13C2 PFTeDA	84		50 - 150	09/02/21 04:44	09/10/21 23:46	1
13C3 PFBS	76		50 - 150	09/02/21 04:44	09/10/21 23:46	1
18O2 PFHxS	93		50 - 150	09/02/21 04:44	09/10/21 23:46	1
13C4 PFOS	78		50 - 150	09/02/21 04:44	09/10/21 23:46	1
d3-NMeFOSAA	78		50 - 150	09/02/21 04:44	09/10/21 23:46	1
d5-NEtFOSAA	85		50 - 150	09/02/21 04:44	09/10/21 23:46	1
13C3 HFPO-DA	84		50 - 150	09/02/21 04:44	09/10/21 23:46	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	520		9.1	2.5	ng/L		09/02/21 04:44	09/10/21 23:27	5

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	85		50 - 150	09/02/21 04:44	09/10/21 23:27	5

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

**Client Sample ID: MW-3-40**

**Lab Sample ID: 320-78303-6**

Date Collected: 08/24/21 09:44

Matrix: Water

Date Received: 08/31/21 15:39

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>1.4</b>	<b>J</b>	1.8	0.53	ng/L		09/02/21 04:44	09/10/21 22:02	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		09/02/21 04:44	09/10/21 22:02	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>1.2</b>	<b>J</b>	1.8	0.78	ng/L		09/02/21 04:44	09/10/21 22:02	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		09/02/21 04:44	09/10/21 22:02	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/02/21 04:44	09/10/21 22:02	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		09/02/21 04:44	09/10/21 22:02	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		09/02/21 04:44	09/10/21 22:02	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/02/21 04:44	09/10/21 22:02	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		09/02/21 04:44	09/10/21 22:02	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>1.1</b>	<b>J</b>	1.8	0.18	ng/L		09/02/21 04:44	09/10/21 22:02	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>13</b>		1.8	0.52	ng/L		09/02/21 04:44	09/10/21 22:02	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>14</b>		1.8	0.50	ng/L		09/02/21 04:44	09/10/21 22:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/02/21 04:44	09/10/21 22:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/02/21 04:44	09/10/21 22:02	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/02/21 04:44	09/10/21 22:02	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/02/21 04:44	09/10/21 22:02	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/02/21 04:44	09/10/21 22:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		09/02/21 04:44	09/10/21 22:02	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C2 PFHxA	78		50 - 150				09/02/21 04:44	09/10/21 22:02	1
13C4 PFHpA	70		50 - 150				09/02/21 04:44	09/10/21 22:02	1
13C4 PFOA	96		50 - 150				09/02/21 04:44	09/10/21 22:02	1
13C5 PFNA	78		50 - 150				09/02/21 04:44	09/10/21 22:02	1
13C2 PFDA	91		50 - 150				09/02/21 04:44	09/10/21 22:02	1
13C2 PFUnA	82		50 - 150				09/02/21 04:44	09/10/21 22:02	1
13C2 PFDoA	86		50 - 150				09/02/21 04:44	09/10/21 22:02	1
13C2 PFTeDA	84		50 - 150				09/02/21 04:44	09/10/21 22:02	1
13C3 PFBS	73		50 - 150				09/02/21 04:44	09/10/21 22:02	1
18O2 PFHxS	90		50 - 150				09/02/21 04:44	09/10/21 22:02	1
13C4 PFOS	75		50 - 150				09/02/21 04:44	09/10/21 22:02	1
d3-NMeFOSAA	78		50 - 150				09/02/21 04:44	09/10/21 22:02	1
d5-NEtFOSAA	77		50 - 150				09/02/21 04:44	09/10/21 22:02	1
13C3 HFPO-DA	71		50 - 150				09/02/21 04:44	09/10/21 22:02	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

**Client Sample ID: MW-103-40**

**Lab Sample ID: 320-78303-7**

Date Collected: 08/24/21 09:34

Matrix: Water

Date Received: 08/31/21 15:39

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>1.4</b>	<b>J</b>	1.9	0.54	ng/L		09/02/21 04:44	09/10/21 22:12	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		09/02/21 04:44	09/10/21 22:12	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>1.3</b>	<b>J</b>	1.9	0.79	ng/L		09/02/21 04:44	09/10/21 22:12	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		09/02/21 04:44	09/10/21 22:12	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/02/21 04:44	09/10/21 22:12	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/02/21 04:44	09/10/21 22:12	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		09/02/21 04:44	09/10/21 22:12	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/02/21 04:44	09/10/21 22:12	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		09/02/21 04:44	09/10/21 22:12	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>1.1</b>	<b>J</b>	1.9	0.19	ng/L		09/02/21 04:44	09/10/21 22:12	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>14</b>		1.9	0.53	ng/L		09/02/21 04:44	09/10/21 22:12	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>14</b>		1.9	0.50	ng/L		09/02/21 04:44	09/10/21 22:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/02/21 04:44	09/10/21 22:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/02/21 04:44	09/10/21 22:12	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		09/02/21 04:44	09/10/21 22:12	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/02/21 04:44	09/10/21 22:12	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/02/21 04:44	09/10/21 22:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		09/02/21 04:44	09/10/21 22:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	85		50 - 150	09/02/21 04:44	09/10/21 22:12	1
13C4 PFHpA	76		50 - 150	09/02/21 04:44	09/10/21 22:12	1
13C4 PFOA	100		50 - 150	09/02/21 04:44	09/10/21 22:12	1
13C5 PFNA	85		50 - 150	09/02/21 04:44	09/10/21 22:12	1
13C2 PFDA	93		50 - 150	09/02/21 04:44	09/10/21 22:12	1
13C2 PFUnA	82		50 - 150	09/02/21 04:44	09/10/21 22:12	1
13C2 PFDoA	90		50 - 150	09/02/21 04:44	09/10/21 22:12	1
13C2 PFTeDA	92		50 - 150	09/02/21 04:44	09/10/21 22:12	1
13C3 PFBS	77		50 - 150	09/02/21 04:44	09/10/21 22:12	1
18O2 PFHxS	91		50 - 150	09/02/21 04:44	09/10/21 22:12	1
13C4 PFOS	84		50 - 150	09/02/21 04:44	09/10/21 22:12	1
d3-NMeFOSAA	82		50 - 150	09/02/21 04:44	09/10/21 22:12	1
d5-NEtFOSAA	86		50 - 150	09/02/21 04:44	09/10/21 22:12	1
13C3 HFPO-DA	80		50 - 150	09/02/21 04:44	09/10/21 22:12	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

**Client Sample ID: MW-3-15**

**Lab Sample ID: 320-78303-8**

Date Collected: 08/24/21 10:30

Matrix: Water

Date Received: 08/31/21 15:39

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		09/02/21 04:44	09/10/21 22:21	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		09/02/21 04:44	09/10/21 22:21	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		09/02/21 04:44	09/10/21 22:21	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		09/02/21 04:44	09/10/21 22:21	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		09/02/21 04:44	09/10/21 22:21	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		09/02/21 04:44	09/10/21 22:21	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		09/02/21 04:44	09/10/21 22:21	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/02/21 04:44	09/10/21 22:21	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		09/02/21 04:44	09/10/21 22:21	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.23</b>	<b>J</b>	1.8	0.18	ng/L		09/02/21 04:44	09/10/21 22:21	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>1.1</b>	<b>J I</b>	1.8	0.52	ng/L		09/02/21 04:44	09/10/21 22:21	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>1.8</b>		1.8	0.50	ng/L		09/02/21 04:44	09/10/21 22:21	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/02/21 04:44	09/10/21 22:21	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/02/21 04:44	09/10/21 22:21	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/02/21 04:44	09/10/21 22:21	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/02/21 04:44	09/10/21 22:21	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/02/21 04:44	09/10/21 22:21	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		09/02/21 04:44	09/10/21 22:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	77		50 - 150	09/02/21 04:44	09/10/21 22:21	1
13C4 PFHpA	76		50 - 150	09/02/21 04:44	09/10/21 22:21	1
13C4 PFOA	94		50 - 150	09/02/21 04:44	09/10/21 22:21	1
13C5 PFNA	79		50 - 150	09/02/21 04:44	09/10/21 22:21	1
13C2 PFDA	93		50 - 150	09/02/21 04:44	09/10/21 22:21	1
13C2 PFUnA	90		50 - 150	09/02/21 04:44	09/10/21 22:21	1
13C2 PFDoA	98		50 - 150	09/02/21 04:44	09/10/21 22:21	1
13C2 PFTeDA	91		50 - 150	09/02/21 04:44	09/10/21 22:21	1
13C3 PFBS	72		50 - 150	09/02/21 04:44	09/10/21 22:21	1
18O2 PFHxS	93		50 - 150	09/02/21 04:44	09/10/21 22:21	1
13C4 PFOS	82		50 - 150	09/02/21 04:44	09/10/21 22:21	1
d3-NMeFOSAA	77		50 - 150	09/02/21 04:44	09/10/21 22:21	1
d5-NEtFOSAA	86		50 - 150	09/02/21 04:44	09/10/21 22:21	1
13C3 HFPO-DA	75		50 - 150	09/02/21 04:44	09/10/21 22:21	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

**Client Sample ID: MW-6-20**

**Lab Sample ID: 320-78303-9**

**Date Collected: 08/24/21 11:35**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		09/02/21 04:44	09/10/21 22:30	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		09/02/21 04:44	09/10/21 22:30	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		09/02/21 04:44	09/10/21 22:30	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		09/02/21 04:44	09/10/21 22:30	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/02/21 04:44	09/10/21 22:30	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		09/02/21 04:44	09/10/21 22:30	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		09/02/21 04:44	09/10/21 22:30	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/02/21 04:44	09/10/21 22:30	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		09/02/21 04:44	09/10/21 22:30	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		09/02/21 04:44	09/10/21 22:30	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.69</b>	<b>J</b>	1.8	0.52	ng/L		09/02/21 04:44	09/10/21 22:30	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		09/02/21 04:44	09/10/21 22:30	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		09/02/21 04:44	09/10/21 22:30	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		09/02/21 04:44	09/10/21 22:30	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/02/21 04:44	09/10/21 22:30	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		09/02/21 04:44	09/10/21 22:30	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/02/21 04:44	09/10/21 22:30	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		09/02/21 04:44	09/10/21 22:30	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	74		50 - 150	09/02/21 04:44	09/10/21 22:30	1
13C4 PFHpA	64		50 - 150	09/02/21 04:44	09/10/21 22:30	1
13C4 PFOA	93		50 - 150	09/02/21 04:44	09/10/21 22:30	1
13C5 PFNA	77		50 - 150	09/02/21 04:44	09/10/21 22:30	1
13C2 PFDA	86		50 - 150	09/02/21 04:44	09/10/21 22:30	1
13C2 PFUnA	84		50 - 150	09/02/21 04:44	09/10/21 22:30	1
13C2 PFDoA	95		50 - 150	09/02/21 04:44	09/10/21 22:30	1
13C2 PFTeDA	88		50 - 150	09/02/21 04:44	09/10/21 22:30	1
13C3 PFBS	64		50 - 150	09/02/21 04:44	09/10/21 22:30	1
18O2 PFHxS	86		50 - 150	09/02/21 04:44	09/10/21 22:30	1
13C4 PFOS	79		50 - 150	09/02/21 04:44	09/10/21 22:30	1
d3-NMeFOSAA	79		50 - 150	09/02/21 04:44	09/10/21 22:30	1
d5-NEtFOSAA	85		50 - 150	09/02/21 04:44	09/10/21 22:30	1
13C3 HFPO-DA	75		50 - 150	09/02/21 04:44	09/10/21 22:30	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

**Client Sample ID: MW-7-20**

**Lab Sample ID: 320-78303-10**

Date Collected: 08/24/21 12:56

Matrix: Water

Date Received: 08/31/21 15:39

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	2.9		1.8	0.53	ng/L		09/02/21 04:44	09/10/21 22:59	1
Perfluoroheptanoic acid (PFHpA)	0.75	J	1.8	0.23	ng/L		09/02/21 04:44	09/10/21 22:59	1
Perfluorooctanoic acid (PFOA)	3.4		1.8	0.77	ng/L		09/02/21 04:44	09/10/21 22:59	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		09/02/21 04:44	09/10/21 22:59	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/02/21 04:44	09/10/21 22:59	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		09/02/21 04:44	09/10/21 22:59	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		09/02/21 04:44	09/10/21 22:59	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/02/21 04:44	09/10/21 22:59	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		09/02/21 04:44	09/10/21 22:59	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		09/02/21 04:44	09/10/21 22:59	1
Perfluorohexanesulfonic acid (PFHxS)	1.0	J	1.8	0.52	ng/L		09/02/21 04:44	09/10/21 22:59	1
Perfluorooctanesulfonic acid (PFOS)	13		1.8	0.49	ng/L		09/02/21 04:44	09/10/21 22:59	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		09/02/21 04:44	09/10/21 22:59	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		09/02/21 04:44	09/10/21 22:59	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/02/21 04:44	09/10/21 22:59	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		09/02/21 04:44	09/10/21 22:59	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/02/21 04:44	09/10/21 22:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		09/02/21 04:44	09/10/21 22:59	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	73		50 - 150	09/02/21 04:44	09/10/21 22:59	1
13C4 PFHpA	70		50 - 150	09/02/21 04:44	09/10/21 22:59	1
13C4 PFOA	87		50 - 150	09/02/21 04:44	09/10/21 22:59	1
13C5 PFNA	74		50 - 150	09/02/21 04:44	09/10/21 22:59	1
13C2 PFDA	78		50 - 150	09/02/21 04:44	09/10/21 22:59	1
13C2 PFUnA	74		50 - 150	09/02/21 04:44	09/10/21 22:59	1
13C2 PFDoA	79		50 - 150	09/02/21 04:44	09/10/21 22:59	1
13C2 PFTeDA	77		50 - 150	09/02/21 04:44	09/10/21 22:59	1
13C3 PFBS	70		50 - 150	09/02/21 04:44	09/10/21 22:59	1
18O2 PFHxS	85		50 - 150	09/02/21 04:44	09/10/21 22:59	1
13C4 PFOS	70		50 - 150	09/02/21 04:44	09/10/21 22:59	1
d3-NMeFOSAA	74		50 - 150	09/02/21 04:44	09/10/21 22:59	1
d5-NEtFOSAA	74		50 - 150	09/02/21 04:44	09/10/21 22:59	1
13C3 HFPO-DA	72		50 - 150	09/02/21 04:44	09/10/21 22:59	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

**Client Sample ID: MW-4-20**

**Lab Sample ID: 320-78303-11**

**Date Collected: 08/24/21 13:57**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		09/02/21 04:44	09/10/21 23:08	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		09/02/21 04:44	09/10/21 23:08	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		09/02/21 04:44	09/10/21 23:08	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		09/02/21 04:44	09/10/21 23:08	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/02/21 04:44	09/10/21 23:08	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		09/02/21 04:44	09/10/21 23:08	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		09/02/21 04:44	09/10/21 23:08	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/02/21 04:44	09/10/21 23:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		09/02/21 04:44	09/10/21 23:08	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		09/02/21 04:44	09/10/21 23:08	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.64</b>	<b>J I</b>	1.8	0.52	ng/L		09/02/21 04:44	09/10/21 23:08	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		09/02/21 04:44	09/10/21 23:08	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/02/21 04:44	09/10/21 23:08	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/02/21 04:44	09/10/21 23:08	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/02/21 04:44	09/10/21 23:08	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		09/02/21 04:44	09/10/21 23:08	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/02/21 04:44	09/10/21 23:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		09/02/21 04:44	09/10/21 23:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	67		50 - 150	09/02/21 04:44	09/10/21 23:08	1
13C4 PFHpA	67		50 - 150	09/02/21 04:44	09/10/21 23:08	1
13C4 PFOA	94		50 - 150	09/02/21 04:44	09/10/21 23:08	1
13C5 PFNA	74		50 - 150	09/02/21 04:44	09/10/21 23:08	1
13C2 PFDA	85		50 - 150	09/02/21 04:44	09/10/21 23:08	1
13C2 PFUnA	78		50 - 150	09/02/21 04:44	09/10/21 23:08	1
13C2 PFDoA	90		50 - 150	09/02/21 04:44	09/10/21 23:08	1
13C2 PFTeDA	93		50 - 150	09/02/21 04:44	09/10/21 23:08	1
13C3 PFBS	66		50 - 150	09/02/21 04:44	09/10/21 23:08	1
18O2 PFHxS	88		50 - 150	09/02/21 04:44	09/10/21 23:08	1
13C4 PFOS	76		50 - 150	09/02/21 04:44	09/10/21 23:08	1
d3-NMeFOSAA	75		50 - 150	09/02/21 04:44	09/10/21 23:08	1
d5-NEtFOSAA	79		50 - 150	09/02/21 04:44	09/10/21 23:08	1
13C3 HFPO-DA	64		50 - 150	09/02/21 04:44	09/10/21 23:08	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

**Client Sample ID: MW-5-20**

**Lab Sample ID: 320-78303-12**

**Date Collected: 08/24/21 15:44**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>0.68</b>	<b>J</b>	1.8	0.53	ng/L		09/02/21 05:04	09/06/21 06:20	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		09/02/21 05:04	09/06/21 06:20	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>1.3</b>	<b>J</b>	1.8	0.78	ng/L		09/02/21 05:04	09/06/21 06:20	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		09/02/21 05:04	09/06/21 06:20	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/02/21 05:04	09/06/21 06:20	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		09/02/21 05:04	09/06/21 06:20	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		09/02/21 05:04	09/06/21 06:20	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/02/21 05:04	09/06/21 06:20	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		09/02/21 05:04	09/06/21 06:20	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.50</b>	<b>J</b>	1.8	0.18	ng/L		09/02/21 05:04	09/06/21 06:20	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.92</b>	<b>J</b>	1.8	0.52	ng/L		09/02/21 05:04	09/06/21 06:20	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>2.7</b>		1.8	0.49	ng/L		09/02/21 05:04	09/06/21 06:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/02/21 05:04	09/06/21 06:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/02/21 05:04	09/06/21 06:20	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/02/21 05:04	09/06/21 06:20	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/02/21 05:04	09/06/21 06:20	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/02/21 05:04	09/06/21 06:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		09/02/21 05:04	09/06/21 06:20	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C2 PFHxA	72		50 - 150				09/02/21 05:04	09/06/21 06:20	1
13C4 PFHpA	75		50 - 150				09/02/21 05:04	09/06/21 06:20	1
13C4 PFOA	99		50 - 150				09/02/21 05:04	09/06/21 06:20	1
13C5 PFNA	76		50 - 150				09/02/21 05:04	09/06/21 06:20	1
13C2 PFDA	85		50 - 150				09/02/21 05:04	09/06/21 06:20	1
13C2 PFUnA	81		50 - 150				09/02/21 05:04	09/06/21 06:20	1
13C2 PFDoA	92		50 - 150				09/02/21 05:04	09/06/21 06:20	1
13C2 PFTeDA	106		50 - 150				09/02/21 05:04	09/06/21 06:20	1
13C3 PFBS	68		50 - 150				09/02/21 05:04	09/06/21 06:20	1
18O2 PFHxS	97		50 - 150				09/02/21 05:04	09/06/21 06:20	1
13C4 PFOS	88		50 - 150				09/02/21 05:04	09/06/21 06:20	1
d3-NMeFOSAA	89		50 - 150				09/02/21 05:04	09/06/21 06:20	1
d5-NEtFOSAA	99		50 - 150				09/02/21 05:04	09/06/21 06:20	1
13C3 HFPO-DA	69		50 - 150				09/02/21 05:04	09/06/21 06:20	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

**Client Sample ID: MW-8-20**

**Lab Sample ID: 320-78303-13**

**Date Collected: 08/25/21 09:08**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		09/02/21 05:04	09/06/21 06:30	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		09/02/21 05:04	09/06/21 06:30	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		09/02/21 05:04	09/06/21 06:30	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		09/02/21 05:04	09/06/21 06:30	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/02/21 05:04	09/06/21 06:30	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/02/21 05:04	09/06/21 06:30	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		09/02/21 05:04	09/06/21 06:30	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/02/21 05:04	09/06/21 06:30	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		09/02/21 05:04	09/06/21 06:30	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		09/02/21 05:04	09/06/21 06:30	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		09/02/21 05:04	09/06/21 06:30	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		09/02/21 05:04	09/06/21 06:30	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		09/02/21 05:04	09/06/21 06:30	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		09/02/21 05:04	09/06/21 06:30	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		09/02/21 05:04	09/06/21 06:30	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/02/21 05:04	09/06/21 06:30	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/02/21 05:04	09/06/21 06:30	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		09/02/21 05:04	09/06/21 06:30	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	71		50 - 150	09/02/21 05:04	09/06/21 06:30	1
13C4 PFHpA	69		50 - 150	09/02/21 05:04	09/06/21 06:30	1
13C4 PFOA	91		50 - 150	09/02/21 05:04	09/06/21 06:30	1
13C5 PFNA	69		50 - 150	09/02/21 05:04	09/06/21 06:30	1
13C2 PFDA	83		50 - 150	09/02/21 05:04	09/06/21 06:30	1
13C2 PFUnA	75		50 - 150	09/02/21 05:04	09/06/21 06:30	1
13C2 PFDoA	89		50 - 150	09/02/21 05:04	09/06/21 06:30	1
13C2 PFTeDA	100		50 - 150	09/02/21 05:04	09/06/21 06:30	1
13C3 PFBS	64		50 - 150	09/02/21 05:04	09/06/21 06:30	1
18O2 PFHxS	83		50 - 150	09/02/21 05:04	09/06/21 06:30	1
13C4 PFOS	76		50 - 150	09/02/21 05:04	09/06/21 06:30	1
d3-NMeFOSAA	81		50 - 150	09/02/21 05:04	09/06/21 06:30	1
d5-NEtFOSAA	87		50 - 150	09/02/21 05:04	09/06/21 06:30	1
13C3 HFPO-DA	62		50 - 150	09/02/21 05:04	09/06/21 06:30	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

**Client Sample ID: MW-10-20**

**Lab Sample ID: 320-78303-14**

Date Collected: 08/25/21 10:19

Matrix: Water

Date Received: 08/31/21 15:39

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	15		1.8	0.52	ng/L		09/02/21 05:04	09/06/21 06:39	1
Perfluoroheptanoic acid (PFHpA)	6.3		1.8	0.23	ng/L		09/02/21 05:04	09/06/21 06:39	1
Perfluorooctanoic acid (PFOA)	2.1		1.8	0.77	ng/L		09/02/21 05:04	09/06/21 06:39	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		09/02/21 05:04	09/06/21 06:39	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/02/21 05:04	09/06/21 06:39	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		09/02/21 05:04	09/06/21 06:39	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		09/02/21 05:04	09/06/21 06:39	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/02/21 05:04	09/06/21 06:39	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		09/02/21 05:04	09/06/21 06:39	1
Perfluorobutanesulfonic acid (PFBS)	1.3	J	1.8	0.18	ng/L		09/02/21 05:04	09/06/21 06:39	1
Perfluorohexanesulfonic acid (PFHxS)	19		1.8	0.51	ng/L		09/02/21 05:04	09/06/21 06:39	1
Perfluorooctanesulfonic acid (PFOS)	91		1.8	0.49	ng/L		09/02/21 05:04	09/06/21 06:39	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		09/02/21 05:04	09/06/21 06:39	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		09/02/21 05:04	09/06/21 06:39	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/02/21 05:04	09/06/21 06:39	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		09/02/21 05:04	09/06/21 06:39	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/02/21 05:04	09/06/21 06:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		09/02/21 05:04	09/06/21 06:39	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	69		50 - 150	09/02/21 05:04	09/06/21 06:39	1
13C4 PFHpA	67		50 - 150	09/02/21 05:04	09/06/21 06:39	1
13C4 PFOA	93		50 - 150	09/02/21 05:04	09/06/21 06:39	1
13C5 PFNA	66		50 - 150	09/02/21 05:04	09/06/21 06:39	1
13C2 PFDA	85		50 - 150	09/02/21 05:04	09/06/21 06:39	1
13C2 PFUnA	76		50 - 150	09/02/21 05:04	09/06/21 06:39	1
13C2 PFDoA	90		50 - 150	09/02/21 05:04	09/06/21 06:39	1
13C2 PFTeDA	105		50 - 150	09/02/21 05:04	09/06/21 06:39	1
13C3 PFBS	61		50 - 150	09/02/21 05:04	09/06/21 06:39	1
18O2 PFHxS	85		50 - 150	09/02/21 05:04	09/06/21 06:39	1
13C4 PFOS	73		50 - 150	09/02/21 05:04	09/06/21 06:39	1
d3-NMeFOSAA	82		50 - 150	09/02/21 05:04	09/06/21 06:39	1
d5-NEtFOSAA	89		50 - 150	09/02/21 05:04	09/06/21 06:39	1
13C3 HFPO-DA	57		50 - 150	09/02/21 05:04	09/06/21 06:39	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

**Client Sample ID: MW-9-30**

**Lab Sample ID: 320-78303-15**

Date Collected: 08/25/21 11:18

Matrix: Water

Date Received: 08/31/21 15:39

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	5.5		1.9	0.54	ng/L		09/02/21 05:04	09/06/21 06:49	1
Perfluoroheptanoic acid (PFHpA)	1.9		1.9	0.23	ng/L		09/02/21 05:04	09/06/21 06:49	1
Perfluorooctanoic acid (PFOA)	1.2	J	1.9	0.80	ng/L		09/02/21 05:04	09/06/21 06:49	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		09/02/21 05:04	09/06/21 06:49	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/02/21 05:04	09/06/21 06:49	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/02/21 05:04	09/06/21 06:49	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		09/02/21 05:04	09/06/21 06:49	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/02/21 05:04	09/06/21 06:49	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		09/02/21 05:04	09/06/21 06:49	1
Perfluorobutanesulfonic acid (PFBS)	0.96	J	1.9	0.19	ng/L		09/02/21 05:04	09/06/21 06:49	1
Perfluorohexanesulfonic acid (PFHxS)	8.6		1.9	0.53	ng/L		09/02/21 05:04	09/06/21 06:49	1
Perfluorooctanesulfonic acid (PFOS)	43		1.9	0.51	ng/L		09/02/21 05:04	09/06/21 06:49	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		09/02/21 05:04	09/06/21 06:49	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		09/02/21 05:04	09/06/21 06:49	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		09/02/21 05:04	09/06/21 06:49	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/02/21 05:04	09/06/21 06:49	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/02/21 05:04	09/06/21 06:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		09/02/21 05:04	09/06/21 06:49	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C2 PFHxA	75		50 - 150				09/02/21 05:04	09/06/21 06:49	1
13C4 PFHpA	76		50 - 150				09/02/21 05:04	09/06/21 06:49	1
13C4 PFOA	94		50 - 150				09/02/21 05:04	09/06/21 06:49	1
13C5 PFNA	77		50 - 150				09/02/21 05:04	09/06/21 06:49	1
13C2 PFDA	89		50 - 150				09/02/21 05:04	09/06/21 06:49	1
13C2 PFUnA	81		50 - 150				09/02/21 05:04	09/06/21 06:49	1
13C2 PFDoA	95		50 - 150				09/02/21 05:04	09/06/21 06:49	1
13C2 PFTeDA	110		50 - 150				09/02/21 05:04	09/06/21 06:49	1
13C3 PFBS	70		50 - 150				09/02/21 05:04	09/06/21 06:49	1
18O2 PFHxS	104		50 - 150				09/02/21 05:04	09/06/21 06:49	1
13C4 PFOS	85		50 - 150				09/02/21 05:04	09/06/21 06:49	1
d3-NMeFOSAA	91		50 - 150				09/02/21 05:04	09/06/21 06:49	1
d5-NEtFOSAA	95		50 - 150				09/02/21 05:04	09/06/21 06:49	1
13C3 HFPO-DA	71		50 - 150				09/02/21 05:04	09/06/21 06:49	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

**Client Sample ID: MW-109-30**

**Lab Sample ID: 320-78303-16**

Date Collected: 08/25/21 11:08

Matrix: Water

Date Received: 08/31/21 15:39

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	5.3		1.8	0.54	ng/L		09/02/21 05:04	09/06/21 06:58	1
Perfluoroheptanoic acid (PFHpA)	1.8		1.8	0.23	ng/L		09/02/21 05:04	09/06/21 06:58	1
Perfluorooctanoic acid (PFOA)	0.95	J	1.8	0.78	ng/L		09/02/21 05:04	09/06/21 06:58	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		09/02/21 05:04	09/06/21 06:58	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		09/02/21 05:04	09/06/21 06:58	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		09/02/21 05:04	09/06/21 06:58	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		09/02/21 05:04	09/06/21 06:58	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/02/21 05:04	09/06/21 06:58	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		09/02/21 05:04	09/06/21 06:58	1
Perfluorobutanesulfonic acid (PFBS)	0.74	J	1.8	0.18	ng/L		09/02/21 05:04	09/06/21 06:58	1
Perfluorohexanesulfonic acid (PFHxS)	9.8		1.8	0.53	ng/L		09/02/21 05:04	09/06/21 06:58	1
Perfluorooctanesulfonic acid (PFOS)	42		1.8	0.50	ng/L		09/02/21 05:04	09/06/21 06:58	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/02/21 05:04	09/06/21 06:58	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/02/21 05:04	09/06/21 06:58	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/02/21 05:04	09/06/21 06:58	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/02/21 05:04	09/06/21 06:58	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.30	ng/L		09/02/21 05:04	09/06/21 06:58	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		09/02/21 05:04	09/06/21 06:58	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C2 PFHxA	73		50 - 150				09/02/21 05:04	09/06/21 06:58	1
13C4 PFHpA	76		50 - 150				09/02/21 05:04	09/06/21 06:58	1
13C4 PFOA	99		50 - 150				09/02/21 05:04	09/06/21 06:58	1
13C5 PFNA	76		50 - 150				09/02/21 05:04	09/06/21 06:58	1
13C2 PFDA	95		50 - 150				09/02/21 05:04	09/06/21 06:58	1
13C2 PFUnA	88		50 - 150				09/02/21 05:04	09/06/21 06:58	1
13C2 PFDoA	103		50 - 150				09/02/21 05:04	09/06/21 06:58	1
13C2 PFTeDA	114		50 - 150				09/02/21 05:04	09/06/21 06:58	1
13C3 PFBS	69		50 - 150				09/02/21 05:04	09/06/21 06:58	1
18O2 PFHxS	100		50 - 150				09/02/21 05:04	09/06/21 06:58	1
13C4 PFOS	89		50 - 150				09/02/21 05:04	09/06/21 06:58	1
d3-NMeFOSAA	103		50 - 150				09/02/21 05:04	09/06/21 06:58	1
d5-NEtFOSAA	105		50 - 150				09/02/21 05:04	09/06/21 06:58	1
13C3 HFPO-DA	65		50 - 150				09/02/21 05:04	09/06/21 06:58	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

**Client Sample ID: MW-11-15**

**Lab Sample ID: 320-78303-17**

Date Collected: 08/27/21 09:25

Matrix: Water

Date Received: 08/31/21 15:39

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	53		1.8	0.53	ng/L		09/02/21 05:04	09/06/21 07:08	1
Perfluoroheptanoic acid (PFHpA)	13		1.8	0.23	ng/L		09/02/21 05:04	09/06/21 07:08	1
Perfluorooctanoic acid (PFOA)	5.4		1.8	0.78	ng/L		09/02/21 05:04	09/06/21 07:08	1
Perfluorononanoic acid (PFNA)	1.3	J	1.8	0.25	ng/L		09/02/21 05:04	09/06/21 07:08	1
Perfluorodecanoic acid (PFDA)	1.7	J	1.8	0.29	ng/L		09/02/21 05:04	09/06/21 07:08	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		09/02/21 05:04	09/06/21 07:08	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		09/02/21 05:04	09/06/21 07:08	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/02/21 05:04	09/06/21 07:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		09/02/21 05:04	09/06/21 07:08	1
Perfluorobutanesulfonic acid (PFBS)	11		1.8	0.18	ng/L		09/02/21 05:04	09/06/21 07:08	1
Perfluorohexanesulfonic acid (PFHxS)	44		1.8	0.53	ng/L		09/02/21 05:04	09/06/21 07:08	1
Perfluorooctanesulfonic acid (PFOS)	59		1.8	0.50	ng/L		09/02/21 05:04	09/06/21 07:08	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/02/21 05:04	09/06/21 07:08	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/02/21 05:04	09/06/21 07:08	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/02/21 05:04	09/06/21 07:08	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/02/21 05:04	09/06/21 07:08	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/02/21 05:04	09/06/21 07:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		09/02/21 05:04	09/06/21 07:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	76		50 - 150	09/02/21 05:04	09/06/21 07:08	1
13C4 PFHpA	62		50 - 150	09/02/21 05:04	09/06/21 07:08	1
13C4 PFOA	104		50 - 150	09/02/21 05:04	09/06/21 07:08	1
13C5 PFNA	76		50 - 150	09/02/21 05:04	09/06/21 07:08	1
13C2 PFDA	95		50 - 150	09/02/21 05:04	09/06/21 07:08	1
13C2 PFUnA	84		50 - 150	09/02/21 05:04	09/06/21 07:08	1
13C2 PFDoA	96		50 - 150	09/02/21 05:04	09/06/21 07:08	1
13C2 PFTeDA	120		50 - 150	09/02/21 05:04	09/06/21 07:08	1
13C3 PFBS	66		50 - 150	09/02/21 05:04	09/06/21 07:08	1
18O2 PFHxS	99		50 - 150	09/02/21 05:04	09/06/21 07:08	1
13C4 PFOS	80		50 - 150	09/02/21 05:04	09/06/21 07:08	1
d3-NMeFOSAA	93		50 - 150	09/02/21 05:04	09/06/21 07:08	1
d5-NEtFOSAA	97		50 - 150	09/02/21 05:04	09/06/21 07:08	1
13C3 HFPO-DA	62		50 - 150	09/02/21 05:04	09/06/21 07:08	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

**Client Sample ID: MW-12-10**

**Lab Sample ID: 320-78303-18**

Date Collected: 08/27/21 10:34

Matrix: Water

Date Received: 08/31/21 15:39

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	2.8		1.8	0.53	ng/L		09/02/21 05:04	09/06/21 07:17	1
Perfluoroheptanoic acid (PFHpA)	2.9		1.8	0.23	ng/L		09/02/21 05:04	09/06/21 07:17	1
Perfluorooctanoic acid (PFOA)	2.0		1.8	0.78	ng/L		09/02/21 05:04	09/06/21 07:17	1
Perfluorononanoic acid (PFNA)	0.55	J	1.8	0.25	ng/L		09/02/21 05:04	09/06/21 07:17	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/02/21 05:04	09/06/21 07:17	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		09/02/21 05:04	09/06/21 07:17	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		09/02/21 05:04	09/06/21 07:17	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/02/21 05:04	09/06/21 07:17	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		09/02/21 05:04	09/06/21 07:17	1
Perfluorobutanesulfonic acid (PFBS)	0.21	J	1.8	0.18	ng/L		09/02/21 05:04	09/06/21 07:17	1
Perfluorohexanesulfonic acid (PFHxS)	8.2		1.8	0.52	ng/L		09/02/21 05:04	09/06/21 07:17	1
Perfluorooctanesulfonic acid (PFOS)	36		1.8	0.50	ng/L		09/02/21 05:04	09/06/21 07:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/02/21 05:04	09/06/21 07:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/02/21 05:04	09/06/21 07:17	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/02/21 05:04	09/06/21 07:17	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/02/21 05:04	09/06/21 07:17	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/02/21 05:04	09/06/21 07:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		09/02/21 05:04	09/06/21 07:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	81		50 - 150	09/02/21 05:04	09/06/21 07:17	1
13C4 PFHpA	87		50 - 150	09/02/21 05:04	09/06/21 07:17	1
13C4 PFOA	97		50 - 150	09/02/21 05:04	09/06/21 07:17	1
13C5 PFNA	80		50 - 150	09/02/21 05:04	09/06/21 07:17	1
13C2 PFDA	93		50 - 150	09/02/21 05:04	09/06/21 07:17	1
13C2 PFUnA	84		50 - 150	09/02/21 05:04	09/06/21 07:17	1
13C2 PFDoA	95		50 - 150	09/02/21 05:04	09/06/21 07:17	1
13C2 PFTeDA	105		50 - 150	09/02/21 05:04	09/06/21 07:17	1
13C3 PFBS	81		50 - 150	09/02/21 05:04	09/06/21 07:17	1
18O2 PFHxS	102		50 - 150	09/02/21 05:04	09/06/21 07:17	1
13C4 PFOS	90		50 - 150	09/02/21 05:04	09/06/21 07:17	1
d3-NMeFOSAA	91		50 - 150	09/02/21 05:04	09/06/21 07:17	1
d5-NEtFOSAA	98		50 - 150	09/02/21 05:04	09/06/21 07:17	1
13C3 HFPO-DA	76		50 - 150	09/02/21 05:04	09/06/21 07:17	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

**Client Sample ID: MW-112-10**

**Lab Sample ID: 320-78303-19**

Date Collected: 08/27/21 10:24

Matrix: Water

Date Received: 08/31/21 15:39

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	2.8		1.8	0.52	ng/L		09/02/21 05:04	09/06/21 07:45	1
Perfluoroheptanoic acid (PFHpA)	3.3		1.8	0.23	ng/L		09/02/21 05:04	09/06/21 07:45	1
Perfluorooctanoic acid (PFOA)	1.9		1.8	0.77	ng/L		09/02/21 05:04	09/06/21 07:45	1
Perfluorononanoic acid (PFNA)	0.55	J	1.8	0.24	ng/L		09/02/21 05:04	09/06/21 07:45	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/02/21 05:04	09/06/21 07:45	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		09/02/21 05:04	09/06/21 07:45	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		09/02/21 05:04	09/06/21 07:45	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/02/21 05:04	09/06/21 07:45	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		09/02/21 05:04	09/06/21 07:45	1
Perfluorobutanesulfonic acid (PFBS)	0.50	J	1.8	0.18	ng/L		09/02/21 05:04	09/06/21 07:45	1
Perfluorohexanesulfonic acid (PFHxS)	11		1.8	0.52	ng/L		09/02/21 05:04	09/06/21 07:45	1
Perfluorooctanesulfonic acid (PFOS)	100		1.8	0.49	ng/L		09/02/21 05:04	09/06/21 07:45	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		09/02/21 05:04	09/06/21 07:45	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		09/02/21 05:04	09/06/21 07:45	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/02/21 05:04	09/06/21 07:45	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		09/02/21 05:04	09/06/21 07:45	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/02/21 05:04	09/06/21 07:45	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		09/02/21 05:04	09/06/21 07:45	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	90		50 - 150	09/02/21 05:04	09/06/21 07:45	1
13C4 PFHpA	89		50 - 150	09/02/21 05:04	09/06/21 07:45	1
13C4 PFOA	99		50 - 150	09/02/21 05:04	09/06/21 07:45	1
13C5 PFNA	80		50 - 150	09/02/21 05:04	09/06/21 07:45	1
13C2 PFDA	95		50 - 150	09/02/21 05:04	09/06/21 07:45	1
13C2 PFUnA	85		50 - 150	09/02/21 05:04	09/06/21 07:45	1
13C2 PFDoA	97		50 - 150	09/02/21 05:04	09/06/21 07:45	1
13C2 PFTeDA	106		50 - 150	09/02/21 05:04	09/06/21 07:45	1
13C3 PFBS	84		50 - 150	09/02/21 05:04	09/06/21 07:45	1
18O2 PFHxS	105		50 - 150	09/02/21 05:04	09/06/21 07:45	1
13C4 PFOS	83		50 - 150	09/02/21 05:04	09/06/21 07:45	1
d3-NMeFOSAA	96		50 - 150	09/02/21 05:04	09/06/21 07:45	1
d5-NEtFOSAA	102		50 - 150	09/02/21 05:04	09/06/21 07:45	1
13C3 HFPO-DA	71		50 - 150	09/02/21 05:04	09/06/21 07:45	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

**Client Sample ID: EB-12-10**

**Lab Sample ID: 320-78303-20**

**Date Collected: 08/27/21 11:20**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		09/02/21 05:04	09/06/21 07:55	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		09/02/21 05:04	09/06/21 07:55	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		09/02/21 05:04	09/06/21 07:55	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		09/02/21 05:04	09/06/21 07:55	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/02/21 05:04	09/06/21 07:55	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		09/02/21 05:04	09/06/21 07:55	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		09/02/21 05:04	09/06/21 07:55	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/02/21 05:04	09/06/21 07:55	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		09/02/21 05:04	09/06/21 07:55	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		09/02/21 05:04	09/06/21 07:55	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		09/02/21 05:04	09/06/21 07:55	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		09/02/21 05:04	09/06/21 07:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		09/02/21 05:04	09/06/21 07:55	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		09/02/21 05:04	09/06/21 07:55	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/02/21 05:04	09/06/21 07:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		09/02/21 05:04	09/06/21 07:55	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/02/21 05:04	09/06/21 07:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		09/02/21 05:04	09/06/21 07:55	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		50 - 150	09/02/21 05:04	09/06/21 07:55	1
13C4 PFHpA	94		50 - 150	09/02/21 05:04	09/06/21 07:55	1
13C4 PFOA	103		50 - 150	09/02/21 05:04	09/06/21 07:55	1
13C5 PFNA	85		50 - 150	09/02/21 05:04	09/06/21 07:55	1
13C2 PFDA	92		50 - 150	09/02/21 05:04	09/06/21 07:55	1
13C2 PFUnA	89		50 - 150	09/02/21 05:04	09/06/21 07:55	1
13C2 PFDoA	73		50 - 150	09/02/21 05:04	09/06/21 07:55	1
13C2 PFTeDA	100		50 - 150	09/02/21 05:04	09/06/21 07:55	1
13C3 PFBS	86		50 - 150	09/02/21 05:04	09/06/21 07:55	1
18O2 PFHxS	107		50 - 150	09/02/21 05:04	09/06/21 07:55	1
13C4 PFOS	91		50 - 150	09/02/21 05:04	09/06/21 07:55	1
d3-NMeFOSAA	105		50 - 150	09/02/21 05:04	09/06/21 07:55	1
d5-NEtFOSAA	91		50 - 150	09/02/21 05:04	09/06/21 07:55	1
13C3 HFPO-DA	75		50 - 150	09/02/21 05:04	09/06/21 07:55	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

**Client Sample ID: GAC**

**Lab Sample ID: 320-78303-21**

**Date Collected: 08/27/21 12:25**

**Matrix: Water**

**Date Received: 08/31/21 15:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		09/10/21 04:46	09/11/21 18:10	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		09/10/21 04:46	09/11/21 18:10	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		09/10/21 04:46	09/11/21 18:10	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		09/10/21 04:46	09/11/21 18:10	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/10/21 04:46	09/11/21 18:10	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/10/21 04:46	09/11/21 18:10	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		09/10/21 04:46	09/11/21 18:10	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/10/21 04:46	09/11/21 18:10	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		09/10/21 04:46	09/11/21 18:10	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		09/10/21 04:46	09/11/21 18:10	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.54	ng/L		09/10/21 04:46	09/11/21 18:10	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		09/10/21 04:46	09/11/21 18:10	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		09/10/21 04:46	09/11/21 18:10	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		09/10/21 04:46	09/11/21 18:10	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		09/10/21 04:46	09/11/21 18:10	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		09/10/21 04:46	09/11/21 18:10	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/10/21 04:46	09/11/21 18:10	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		09/10/21 04:46	09/11/21 18:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		50 - 150	09/10/21 04:46	09/11/21 18:10	1
13C4 PFHpA	86		50 - 150	09/10/21 04:46	09/11/21 18:10	1
13C4 PFOA	87		50 - 150	09/10/21 04:46	09/11/21 18:10	1
13C5 PFNA	80		50 - 150	09/10/21 04:46	09/11/21 18:10	1
13C2 PFDA	85		50 - 150	09/10/21 04:46	09/11/21 18:10	1
13C2 PFUnA	88		50 - 150	09/10/21 04:46	09/11/21 18:10	1
13C2 PFDoA	94		50 - 150	09/10/21 04:46	09/11/21 18:10	1
13C2 PFTeDA	87		50 - 150	09/10/21 04:46	09/11/21 18:10	1
13C3 PFBS	80		50 - 150	09/10/21 04:46	09/11/21 18:10	1
18O2 PFHxS	82		50 - 150	09/10/21 04:46	09/11/21 18:10	1
13C4 PFOS	84		50 - 150	09/10/21 04:46	09/11/21 18:10	1
d3-NMeFOSAA	97		50 - 150	09/10/21 04:46	09/11/21 18:10	1
d5-NEtFOSAA	104		50 - 150	09/10/21 04:46	09/11/21 18:10	1
13C3 HFPO-DA	81		50 - 150	09/10/21 04:46	09/11/21 18:10	1

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: GST MWs

Job ID: 320-78303-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
320-78303-1	MW-1-15	84	86	95	87	90	87	92	90
320-78303-2	MW-1-40	75	69	91	77	86	76	82	85
320-78303-3	MW-2-30	73	72	95	80	88	78	88	89
320-78303-4 - DL	MW-2-20								
320-78303-4	MW-2-20	80	81	94	82	86	86	90	89
320-78303-5 - DL	MW-102-20								
320-78303-5	MW-102-20	77	80	95	78	88	87	87	84
320-78303-6	MW-3-40	78	70	96	78	91	82	86	84
320-78303-7	MW-103-40	85	76	100	85	93	82	90	92
320-78303-8	MW-3-15	77	76	94	79	93	90	98	91
320-78303-9	MW-6-20	74	64	93	77	86	84	95	88
320-78303-10	MW-7-20	73	70	87	74	78	74	79	77
320-78303-11	MW-4-20	67	67	94	74	85	78	90	93
320-78303-12	MW-5-20	72	75	99	76	85	81	92	106
320-78303-13	MW-8-20	71	69	91	69	83	75	89	100
320-78303-14	MW-10-20	69	67	93	66	85	76	90	105
320-78303-15	MW-9-30	75	76	94	77	89	81	95	110
320-78303-16	MW-109-30	73	76	99	76	95	88	103	114
320-78303-17	MW-11-15	76	62	104	76	95	84	96	120
320-78303-18	MW-12-10	81	87	97	80	93	84	95	105
320-78303-19	MW-112-10	90	89	99	80	95	85	97	106
320-78303-20	EB-12-10	95	94	103	85	92	89	73	100
320-78303-21	GAC	86	86	87	80	85	88	94	87
LCS 320-521959/2-A	Lab Control Sample	89	90	95	88	90	86	90	82
LCS 320-521960/2-A	Lab Control Sample	93	99	97	80	92	86	95	105
LCS 320-523724/2-A	Lab Control Sample	84	84	87	76	85	85	88	84
LCSD 320-521959/3-A	Lab Control Sample Dup	94	92	96	88	91	94	91	84
LCSD 320-521960/3-A	Lab Control Sample Dup	87	89	92	77	87	81	91	96
LCSD 320-523724/3-A	Lab Control Sample Dup	91	89	89	82	91	93	97	84
MB 320-521959/1-A	Method Blank	87	95	94	86	92	87	94	86
MB 320-521960/1-A	Method Blank	83	81	93	77	85	80	93	93
MB 320-523724/1-A	Method Blank	88	89	95	80	87	86	97	86

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-78303-1	MW-1-15	87	98	85	82	90	91
320-78303-2	MW-1-40	68	81	70	70	80	73
320-78303-3	MW-2-30	65	91	77	75	77	77
320-78303-4 - DL	MW-2-20			81			
320-78303-4	MW-2-20	77	92	78	82	85	80
320-78303-5 - DL	MW-102-20			85			
320-78303-5	MW-102-20	76	93	78	78	85	84
320-78303-6	MW-3-40	73	90	75	78	77	71
320-78303-7	MW-103-40	77	91	84	82	86	80
320-78303-8	MW-3-15	72	93	82	77	86	75
320-78303-9	MW-6-20	64	86	79	79	85	75
320-78303-10	MW-7-20	70	85	70	74	74	72
320-78303-11	MW-4-20	66	88	76	75	79	64
320-78303-12	MW-5-20	68	97	88	89	99	69

Eurofins TestAmerica, Sacramento

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: GST MWs

Job ID: 320-78303-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-78303-13	MW-8-20	64	83	76	81	87	62
320-78303-14	MW-10-20	61	85	73	82	89	57
320-78303-15	MW-9-30	70	104	85	91	95	71
320-78303-16	MW-109-30	69	100	89	103	105	65
320-78303-17	MW-11-15	66	99	80	93	97	62
320-78303-18	MW-12-10	81	102	90	91	98	76
320-78303-19	MW-112-10	84	105	83	96	102	71
320-78303-20	EB-12-10	86	107	91	105	91	75
320-78303-21	GAC	80	82	84	97	104	81
LCS 320-521959/2-A	Lab Control Sample	86	96	86	86	85	96
LCS 320-521960/2-A	Lab Control Sample	90	103	89	95	93	73
LCS 320-523724/2-A	Lab Control Sample	76	76	75	87	100	81
LCSD 320-521959/3-A	Lab Control Sample Dup	91	98	90	87	90	94
LCSD 320-521960/3-A	Lab Control Sample Dup	82	105	83	93	88	73
LCSD 320-523724/3-A	Lab Control Sample Dup	86	89	88	94	101	88
MB 320-521959/1-A	Method Blank	88	99	80	87	93	89
MB 320-521960/1-A	Method Blank	79	99	84	94	96	76
MB 320-523724/1-A	Method Blank	84	90	82	92	94	87

**Surrogate Legend**

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDoA = 13C2 PFDoA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-521959/1-A**  
**Matrix: Water**  
**Analysis Batch: 524180**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 521959**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		09/02/21 04:44	09/10/21 21:06	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		09/02/21 04:44	09/10/21 21:06	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		09/02/21 04:44	09/10/21 21:06	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		09/02/21 04:44	09/10/21 21:06	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		09/02/21 04:44	09/10/21 21:06	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		09/02/21 04:44	09/10/21 21:06	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		09/02/21 04:44	09/10/21 21:06	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		09/02/21 04:44	09/10/21 21:06	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		09/02/21 04:44	09/10/21 21:06	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		09/02/21 04:44	09/10/21 21:06	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		09/02/21 04:44	09/10/21 21:06	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		09/02/21 04:44	09/10/21 21:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		09/02/21 04:44	09/10/21 21:06	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		09/02/21 04:44	09/10/21 21:06	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		09/02/21 04:44	09/10/21 21:06	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		09/02/21 04:44	09/10/21 21:06	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		09/02/21 04:44	09/10/21 21:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		09/02/21 04:44	09/10/21 21:06	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	87		50 - 150	09/02/21 04:44	09/10/21 21:06	1
13C4 PFHpA	95		50 - 150	09/02/21 04:44	09/10/21 21:06	1
13C4 PFOA	94		50 - 150	09/02/21 04:44	09/10/21 21:06	1
13C5 PFNA	86		50 - 150	09/02/21 04:44	09/10/21 21:06	1
13C2 PFDA	92		50 - 150	09/02/21 04:44	09/10/21 21:06	1
13C2 PFUnA	87		50 - 150	09/02/21 04:44	09/10/21 21:06	1
13C2 PFDoA	94		50 - 150	09/02/21 04:44	09/10/21 21:06	1
13C2 PFTeDA	86		50 - 150	09/02/21 04:44	09/10/21 21:06	1
13C3 PFBS	88		50 - 150	09/02/21 04:44	09/10/21 21:06	1
18O2 PFHxS	99		50 - 150	09/02/21 04:44	09/10/21 21:06	1
13C4 PFOS	80		50 - 150	09/02/21 04:44	09/10/21 21:06	1
d3-NMeFOSAA	87		50 - 150	09/02/21 04:44	09/10/21 21:06	1
d5-NEtFOSAA	93		50 - 150	09/02/21 04:44	09/10/21 21:06	1
13C3 HFPO-DA	89		50 - 150	09/02/21 04:44	09/10/21 21:06	1

**Lab Sample ID: LCS 320-521959/2-A**  
**Matrix: Water**  
**Analysis Batch: 524180**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 521959**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluoroheptanoic acid (PFHpA)	40.0	40.2		ng/L		101	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	38.4		ng/L		96	71 - 133
Perfluorononanoic acid (PFNA)	40.0	42.1		ng/L		105	69 - 130

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-521959/2-A**  
**Matrix: Water**  
**Analysis Batch: 524180**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 521959**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	38.3		ng/L		96	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	40.3		ng/L		101	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	38.2		ng/L		96	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	39.8		ng/L		100	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	40.0		ng/L		100	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	36.1		ng/L		102	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.7		ng/L		101	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	40.3		ng/L		109	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.8		ng/L		102	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	38.5		ng/L		96	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	38.5		ng/L		103	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	36.8		ng/L		92	72 - 132
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	40.7		ng/L		108	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	41.9		ng/L		111	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	89		50 - 150
13C4 PFHpA	90		50 - 150
13C4 PFOA	95		50 - 150
13C5 PFNA	88		50 - 150
13C2 PFDA	90		50 - 150
13C2 PFUnA	86		50 - 150
13C2 PFDoA	90		50 - 150
13C2 PFTeDA	82		50 - 150
13C3 PFBS	86		50 - 150
18O2 PFHxS	96		50 - 150
13C4 PFOS	86		50 - 150
d3-NMeFOSAA	86		50 - 150
d5-NEtFOSAA	85		50 - 150
13C3 HFPO-DA	96		50 - 150

**Lab Sample ID: LCSD 320-521959/3-A**  
**Matrix: Water**  
**Analysis Batch: 524180**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 521959**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	
								RPD	Limit
Perfluorohexanoic acid (PFHxA)	40.0	35.7		ng/L		89	72 - 129	5	30
Perfluoroheptanoic acid (PFHpA)	40.0	41.0		ng/L		103	72 - 130	2	30
Perfluorooctanoic acid (PFOA)	40.0	37.0		ng/L		93	71 - 133	4	30

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-521959/3-A**  
**Matrix: Water**  
**Analysis Batch: 524180**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 521959**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	40.4		ng/L		101	69 - 130	4	30
Perfluorodecanoic acid (PFDA)	40.0	39.8		ng/L		100	71 - 129	4	30
Perfluoroundecanoic acid (PFUnA)	40.0	39.9		ng/L		100	69 - 133	1	30
Perfluorododecanoic acid (PFDoA)	40.0	37.8		ng/L		94	72 - 134	1	30
Perfluorotridecanoic acid (PFTriA)	40.0	40.8		ng/L		102	65 - 144	2	30
Perfluorotetradecanoic acid (PFTeA)	40.0	40.7		ng/L		102	71 - 132	2	30
Perfluorobutanesulfonic acid (PFBS)	35.4	36.4		ng/L		103	72 - 130	1	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	37.0		ng/L		102	68 - 131	1	30
Perfluorooctanesulfonic acid (PFOS)	37.1	38.8		ng/L		105	65 - 140	4	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.4		ng/L		103	65 - 136	1	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	38.7		ng/L		97	61 - 135	1	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	37.4		ng/L		100	77 - 137	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.9		ng/L		100	72 - 132	8	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	39.3		ng/L		104	76 - 136	4	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	38.4		ng/L		102	81 - 141	9	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	94		50 - 150
13C4 PFHpA	92		50 - 150
13C4 PFOA	96		50 - 150
13C5 PFNA	88		50 - 150
13C2 PFDA	91		50 - 150
13C2 PFUnA	94		50 - 150
13C2 PFDoA	91		50 - 150
13C2 PFTeDA	84		50 - 150
13C3 PFBS	91		50 - 150
18O2 PFHxS	98		50 - 150
13C4 PFOS	90		50 - 150
d3-NMeFOSAA	87		50 - 150
d5-NEtFOSAA	90		50 - 150
13C3 HFPO-DA	94		50 - 150

**Lab Sample ID: MB 320-521960/1-A**  
**Matrix: Water**  
**Analysis Batch: 522786**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 521960**

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		09/02/21 05:04	09/06/21 05:52	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		09/02/21 05:04	09/06/21 05:52	1

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: MB 320-521960/1-A**  
**Matrix: Water**  
**Analysis Batch: 522786**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 521960**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		09/02/21 05:04	09/06/21 05:52	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		09/02/21 05:04	09/06/21 05:52	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		09/02/21 05:04	09/06/21 05:52	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		09/02/21 05:04	09/06/21 05:52	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		09/02/21 05:04	09/06/21 05:52	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		09/02/21 05:04	09/06/21 05:52	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		09/02/21 05:04	09/06/21 05:52	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		09/02/21 05:04	09/06/21 05:52	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		09/02/21 05:04	09/06/21 05:52	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		09/02/21 05:04	09/06/21 05:52	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		09/02/21 05:04	09/06/21 05:52	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		09/02/21 05:04	09/06/21 05:52	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		09/02/21 05:04	09/06/21 05:52	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		09/02/21 05:04	09/06/21 05:52	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		09/02/21 05:04	09/06/21 05:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		09/02/21 05:04	09/06/21 05:52	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	83		50 - 150	09/02/21 05:04	09/06/21 05:52	1
13C4 PFHpA	81		50 - 150	09/02/21 05:04	09/06/21 05:52	1
13C4 PFOA	93		50 - 150	09/02/21 05:04	09/06/21 05:52	1
13C5 PFNA	77		50 - 150	09/02/21 05:04	09/06/21 05:52	1
13C2 PFDA	85		50 - 150	09/02/21 05:04	09/06/21 05:52	1
13C2 PFUnA	80		50 - 150	09/02/21 05:04	09/06/21 05:52	1
13C2 PFDoA	93		50 - 150	09/02/21 05:04	09/06/21 05:52	1
13C2 PFTeDA	93		50 - 150	09/02/21 05:04	09/06/21 05:52	1
13C3 PFBS	79		50 - 150	09/02/21 05:04	09/06/21 05:52	1
18O2 PFHxS	99		50 - 150	09/02/21 05:04	09/06/21 05:52	1
13C4 PFOS	84		50 - 150	09/02/21 05:04	09/06/21 05:52	1
d3-NMeFOSAA	94		50 - 150	09/02/21 05:04	09/06/21 05:52	1
d5-NEtFOSAA	96		50 - 150	09/02/21 05:04	09/06/21 05:52	1
13C3 HFPO-DA	76		50 - 150	09/02/21 05:04	09/06/21 05:52	1

**Lab Sample ID: LCS 320-521960/2-A**  
**Matrix: Water**  
**Analysis Batch: 522786**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 521960**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	40.0	35.8		ng/L		89	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	33.5		ng/L		84	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	36.9		ng/L		92	71 - 133
Perfluorononanoic acid (PFNA)	40.0	45.3		ng/L		113	69 - 130
Perfluorodecanoic acid (PFDA)	40.0	38.8		ng/L		97	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	41.2		ng/L		103	69 - 133

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-521960/2-A**  
**Matrix: Water**  
**Analysis Batch: 522786**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 521960**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorododecanoic acid (PFDoA)	40.0	38.9		ng/L		97	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	42.1		ng/L		105	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	39.8		ng/L		100	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	35.9		ng/L		101	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.9		ng/L		96	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	39.6		ng/L		107	65 - 140
N-methylperfluorooctanesulfonamide doacetic acid (NMeFOSAA)	40.0	37.6		ng/L		94	65 - 136
N-ethylperfluorooctanesulfonamide doacetic acid (NEtFOSAA)	40.0	42.6		ng/L		106	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	36.8		ng/L		99	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.4		ng/L		106	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	41.6		ng/L		110	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	40.2		ng/L		107	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	93		50 - 150
13C4 PFHpA	99		50 - 150
13C4 PFOA	97		50 - 150
13C5 PFNA	80		50 - 150
13C2 PFDA	92		50 - 150
13C2 PFUnA	86		50 - 150
13C2 PFDoA	95		50 - 150
13C2 PFTeDA	105		50 - 150
13C3 PFBS	90		50 - 150
18O2 PFHxS	103		50 - 150
13C4 PFOS	89		50 - 150
d3-NMeFOSAA	95		50 - 150
d5-NEtFOSAA	93		50 - 150
13C3 HFPO-DA	73		50 - 150

**Lab Sample ID: LCSD 320-521960/3-A**  
**Matrix: Water**  
**Analysis Batch: 522786**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 521960**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	
								RPD	Limit
Perfluorohexanoic acid (PFHxA)	40.0	35.8		ng/L		90	72 - 129	0	30
Perfluoroheptanoic acid (PFHpA)	40.0	36.9		ng/L		92	72 - 130	10	30
Perfluorooctanoic acid (PFOA)	40.0	39.1		ng/L		98	71 - 133	6	30
Perfluorononanoic acid (PFNA)	40.0	46.8		ng/L		117	69 - 130	3	30
Perfluorodecanoic acid (PFDA)	40.0	37.5		ng/L		94	71 - 129	3	30

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-521960/3-A**  
**Matrix: Water**  
**Analysis Batch: 522786**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 521960**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)	40.0	40.9		ng/L		102	69 - 133	1	30
Perfluorododecanoic acid (PFDoA)	40.0	39.0		ng/L		98	72 - 134	0	30
Perfluorotridecanoic acid (PFTriA)	40.0	43.1		ng/L		108	65 - 144	2	30
Perfluorotetradecanoic acid (PFTeA)	40.0	40.0		ng/L		100	71 - 132	0	30
Perfluorobutanesulfonic acid (PFBS)	35.4	37.2		ng/L		105	72 - 130	4	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.7		ng/L		95	68 - 131	1	30
Perfluorooctanesulfonic acid (PFOS)	37.1	40.8		ng/L		110	65 - 140	3	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	38.1		ng/L		95	65 - 136	1	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.1		ng/L		105	61 - 135	1	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	37.9		ng/L		102	77 - 137	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	52.5		ng/L		131	72 - 132	21	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	43.0		ng/L		114	76 - 136	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	41.7		ng/L		111	81 - 141	4	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	87		50 - 150
13C4 PFHpA	89		50 - 150
13C4 PFOA	92		50 - 150
13C5 PFNA	77		50 - 150
13C2 PFDA	87		50 - 150
13C2 PFUnA	81		50 - 150
13C2 PFDoA	91		50 - 150
13C2 PFTeDA	96		50 - 150
13C3 PFBS	82		50 - 150
18O2 PFHxS	105		50 - 150
13C4 PFOS	83		50 - 150
d3-NMeFOSAA	93		50 - 150
d5-NEtFOSAA	88		50 - 150
13C3 HFPO-DA	73		50 - 150

**Lab Sample ID: MB 320-523724/1-A**  
**Matrix: Water**  
**Analysis Batch: 524271**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 523724**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		09/10/21 04:46	09/11/21 17:43	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		09/10/21 04:46	09/11/21 17:43	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		09/10/21 04:46	09/11/21 17:43	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		09/10/21 04:46	09/11/21 17:43	1

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: MB 320-523724/1-A**  
**Matrix: Water**  
**Analysis Batch: 524271**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 523724**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		09/10/21 04:46	09/11/21 17:43	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		09/10/21 04:46	09/11/21 17:43	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		09/10/21 04:46	09/11/21 17:43	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		09/10/21 04:46	09/11/21 17:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		09/10/21 04:46	09/11/21 17:43	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		09/10/21 04:46	09/11/21 17:43	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		09/10/21 04:46	09/11/21 17:43	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		09/10/21 04:46	09/11/21 17:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		09/10/21 04:46	09/11/21 17:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		09/10/21 04:46	09/11/21 17:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		09/10/21 04:46	09/11/21 17:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		09/10/21 04:46	09/11/21 17:43	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		09/10/21 04:46	09/11/21 17:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		09/10/21 04:46	09/11/21 17:43	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		50 - 150	09/10/21 04:46	09/11/21 17:43	1
13C4 PFHpA	89		50 - 150	09/10/21 04:46	09/11/21 17:43	1
13C4 PFOA	95		50 - 150	09/10/21 04:46	09/11/21 17:43	1
13C5 PFNA	80		50 - 150	09/10/21 04:46	09/11/21 17:43	1
13C2 PFDA	87		50 - 150	09/10/21 04:46	09/11/21 17:43	1
13C2 PFUnA	86		50 - 150	09/10/21 04:46	09/11/21 17:43	1
13C2 PFDoA	97		50 - 150	09/10/21 04:46	09/11/21 17:43	1
13C2 PFTeDA	86		50 - 150	09/10/21 04:46	09/11/21 17:43	1
13C3 PFBS	84		50 - 150	09/10/21 04:46	09/11/21 17:43	1
18O2 PFHxS	90		50 - 150	09/10/21 04:46	09/11/21 17:43	1
13C4 PFOS	82		50 - 150	09/10/21 04:46	09/11/21 17:43	1
d3-NMeFOSAA	92		50 - 150	09/10/21 04:46	09/11/21 17:43	1
d5-NEtFOSAA	94		50 - 150	09/10/21 04:46	09/11/21 17:43	1
13C3 HFPO-DA	87		50 - 150	09/10/21 04:46	09/11/21 17:43	1

**Lab Sample ID: LCS 320-523724/2-A**  
**Matrix: Water**  
**Analysis Batch: 524271**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 523724**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	40.0	44.1		ng/L		110	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	44.8		ng/L		112	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	46.2		ng/L		116	71 - 133
Perfluorononanoic acid (PFNA)	40.0	49.3		ng/L		123	69 - 130
Perfluorodecanoic acid (PFDA)	40.0	38.9		ng/L		97	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	44.6		ng/L		111	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	45.3		ng/L		113	72 - 134

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-523724/2-A**  
**Matrix: Water**  
**Analysis Batch: 524271**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 523724**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorotridecanoic acid (PFTriA)	40.0	48.4		ng/L		121	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	44.1		ng/L		110	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	37.5		ng/L		106	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	41.7		ng/L		115	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	42.1		ng/L		113	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.9		ng/L		105	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.0		ng/L		97	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	43.1		ng/L		116	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	44.2		ng/L		111	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	44.3		ng/L		118	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	47.0		ng/L		125	81 - 141

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxA	84		50 - 150
13C4 PFHpA	84		50 - 150
13C4 PFOA	87		50 - 150
13C5 PFNA	76		50 - 150
13C2 PFDA	85		50 - 150
13C2 PFUnA	85		50 - 150
13C2 PFDoA	88		50 - 150
13C2 PFTeDA	84		50 - 150
13C3 PFBS	76		50 - 150
18O2 PFHxS	76		50 - 150
13C4 PFOS	75		50 - 150
d3-NMeFOSAA	87		50 - 150
d5-NEtFOSAA	100		50 - 150
13C3 HFPO-DA	81		50 - 150

**Lab Sample ID: LCSD 320-523724/3-A**  
**Matrix: Water**  
**Analysis Batch: 524271**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 523724**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	42.9		ng/L		107	72 - 129	3	30
Perfluoroheptanoic acid (PFHpA)	40.0	45.9		ng/L		115	72 - 130	2	30
Perfluorooctanoic acid (PFOA)	40.0	45.7		ng/L		114	71 - 133	1	30
Perfluorononanoic acid (PFNA)	40.0	48.8		ng/L		122	69 - 130	1	30
Perfluorodecanoic acid (PFDA)	40.0	41.2		ng/L		103	71 - 129	6	30
Perfluoroundecanoic acid (PFUnA)	40.0	45.8		ng/L		115	69 - 133	3	30

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-523724/3-A**  
**Matrix: Water**  
**Analysis Batch: 524271**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 523724**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorododecanoic acid (PFDoA)	40.0	44.4		ng/L		111	72 - 134	2	30
Perfluorotridecanoic acid (PFTriA)	40.0	45.9		ng/L		115	65 - 144	5	30
Perfluorotetradecanoic acid (PFTeA)	40.0	43.3		ng/L		108	71 - 132	2	30
Perfluorobutanesulfonic acid (PFBS)	35.4	38.1		ng/L		108	72 - 130	2	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	39.2		ng/L		108	68 - 131	6	30
Perfluorooctanesulfonic acid (PFOS)	37.1	40.5		ng/L		109	65 - 140	4	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	44.2		ng/L		111	65 - 136	5	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.5		ng/L		101	61 - 135	4	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	39.2		ng/L		105	77 - 137	9	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	43.8		ng/L		109	72 - 132	1	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	39.5		ng/L		105	76 - 136	11	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	42.1		ng/L		112	81 - 141	11	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
<sup>13</sup> C2 PFHxA	91		50 - 150
<sup>13</sup> C4 PFHpA	89		50 - 150
<sup>13</sup> C4 PFOA	89		50 - 150
<sup>13</sup> C5 PFNA	82		50 - 150
<sup>13</sup> C2 PFDA	91		50 - 150
<sup>13</sup> C2 PFUnA	93		50 - 150
<sup>13</sup> C2 PFDoA	97		50 - 150
<sup>13</sup> C2 PFTeDA	84		50 - 150
<sup>13</sup> C3 PFBS	86		50 - 150
<sup>18</sup> O2 PFHxS	89		50 - 150
<sup>13</sup> C4 PFOS	88		50 - 150
d3-NMeFOSAA	94		50 - 150
d5-NEtFOSAA	101		50 - 150
<sup>13</sup> C3 HFPO-DA	88		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

## LCMS

### Prep Batch: 521959

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78303-1	MW-1-15	Total/NA	Water	3535	
320-78303-2	MW-1-40	Total/NA	Water	3535	
320-78303-3	MW-2-30	Total/NA	Water	3535	
320-78303-4 - DL	MW-2-20	Total/NA	Water	3535	
320-78303-4	MW-2-20	Total/NA	Water	3535	
320-78303-5 - DL	MW-102-20	Total/NA	Water	3535	
320-78303-5	MW-102-20	Total/NA	Water	3535	
320-78303-6	MW-3-40	Total/NA	Water	3535	
320-78303-7	MW-103-40	Total/NA	Water	3535	
320-78303-8	MW-3-15	Total/NA	Water	3535	
320-78303-9	MW-6-20	Total/NA	Water	3535	
320-78303-10	MW-7-20	Total/NA	Water	3535	
320-78303-11	MW-4-20	Total/NA	Water	3535	
MB 320-521959/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-521959/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-521959/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Prep Batch: 521960

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78303-12	MW-5-20	Total/NA	Water	3535	
320-78303-13	MW-8-20	Total/NA	Water	3535	
320-78303-14	MW-10-20	Total/NA	Water	3535	
320-78303-15	MW-9-30	Total/NA	Water	3535	
320-78303-16	MW-109-30	Total/NA	Water	3535	
320-78303-17	MW-11-15	Total/NA	Water	3535	
320-78303-18	MW-12-10	Total/NA	Water	3535	
320-78303-19	MW-112-10	Total/NA	Water	3535	
320-78303-20	EB-12-10	Total/NA	Water	3535	
MB 320-521960/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-521960/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-521960/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 522786

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78303-12	MW-5-20	Total/NA	Water	EPA 537(Mod)	521960
320-78303-13	MW-8-20	Total/NA	Water	EPA 537(Mod)	521960
320-78303-14	MW-10-20	Total/NA	Water	EPA 537(Mod)	521960
320-78303-15	MW-9-30	Total/NA	Water	EPA 537(Mod)	521960
320-78303-16	MW-109-30	Total/NA	Water	EPA 537(Mod)	521960
320-78303-17	MW-11-15	Total/NA	Water	EPA 537(Mod)	521960
320-78303-18	MW-12-10	Total/NA	Water	EPA 537(Mod)	521960
320-78303-19	MW-112-10	Total/NA	Water	EPA 537(Mod)	521960
320-78303-20	EB-12-10	Total/NA	Water	EPA 537(Mod)	521960
MB 320-521960/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	521960
LCS 320-521960/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	521960
LCSD 320-521960/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	521960

### Prep Batch: 523724

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78303-21	GAC	Total/NA	Water	3535	
MB 320-523724/1-A	Method Blank	Total/NA	Water	3535	

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# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

## LCMS (Continued)

### Prep Batch: 523724 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-523724/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-523724/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 524180

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78303-1	MW-1-15	Total/NA	Water	EPA 537(Mod)	521959
320-78303-2	MW-1-40	Total/NA	Water	EPA 537(Mod)	521959
320-78303-3	MW-2-30	Total/NA	Water	EPA 537(Mod)	521959
320-78303-4 - DL	MW-2-20	Total/NA	Water	EPA 537(Mod)	521959
320-78303-4	MW-2-20	Total/NA	Water	EPA 537(Mod)	521959
320-78303-5 - DL	MW-102-20	Total/NA	Water	EPA 537(Mod)	521959
320-78303-5	MW-102-20	Total/NA	Water	EPA 537(Mod)	521959
320-78303-6	MW-3-40	Total/NA	Water	EPA 537(Mod)	521959
320-78303-7	MW-103-40	Total/NA	Water	EPA 537(Mod)	521959
320-78303-8	MW-3-15	Total/NA	Water	EPA 537(Mod)	521959
320-78303-9	MW-6-20	Total/NA	Water	EPA 537(Mod)	521959
320-78303-10	MW-7-20	Total/NA	Water	EPA 537(Mod)	521959
320-78303-11	MW-4-20	Total/NA	Water	EPA 537(Mod)	521959
MB 320-521959/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	521959
LCS 320-521959/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	521959
LCSD 320-521959/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	521959

### Analysis Batch: 524271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78303-21	GAC	Total/NA	Water	EPA 537(Mod)	523724
MB 320-523724/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	523724
LCS 320-523724/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	523724
LCSD 320-523724/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	523724



# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

## Client Sample ID: MW-1-15

## Lab Sample ID: 320-78303-1

Date Collected: 08/23/21 12:49

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			278.1 mL	10.0 mL	521959	09/02/21 04:44	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524180	09/10/21 21:34	K1S	TAL SAC

## Client Sample ID: MW-1-40

## Lab Sample ID: 320-78303-2

Date Collected: 08/23/21 13:54

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.7 mL	10.0 mL	521959	09/02/21 04:44	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524180	09/10/21 21:43	K1S	TAL SAC

## Client Sample ID: MW-2-30

## Lab Sample ID: 320-78303-3

Date Collected: 08/23/21 15:20

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			273.7 mL	10.0 mL	521959	09/02/21 04:44	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524180	09/10/21 21:53	K1S	TAL SAC

## Client Sample ID: MW-2-20

## Lab Sample ID: 320-78303-4

Date Collected: 08/23/21 15:51

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535	DL		279.3 mL	10.0 mL	521959	09/02/21 04:44	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	5			524180	09/10/21 23:17	K1S	TAL SAC
Total/NA	Prep	3535			279.3 mL	10.0 mL	521959	09/02/21 04:44	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524180	09/10/21 23:36	K1S	TAL SAC

## Client Sample ID: MW-102-20

## Lab Sample ID: 320-78303-5

Date Collected: 08/23/21 15:41

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535	DL		273.7 mL	10.0 mL	521959	09/02/21 04:44	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	5			524180	09/10/21 23:27	K1S	TAL SAC
Total/NA	Prep	3535			273.7 mL	10.0 mL	521959	09/02/21 04:44	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524180	09/10/21 23:46	K1S	TAL SAC

## Client Sample ID: MW-3-40

## Lab Sample ID: 320-78303-6

Date Collected: 08/24/21 09:44

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			272.6 mL	10.0 mL	521959	09/02/21 04:44	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524180	09/10/21 22:02	K1S	TAL SAC

Eurofins TestAmerica, Sacramento

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

**Client Sample ID: MW-103-40**

**Lab Sample ID: 320-78303-7**

Date Collected: 08/24/21 09:34

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.8 mL	10.0 mL	521959	09/02/21 04:44	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524180	09/10/21 22:12	K1S	TAL SAC

**Client Sample ID: MW-3-15**

**Lab Sample ID: 320-78303-8**

Date Collected: 08/24/21 10:30

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.8 mL	10.0 mL	521959	09/02/21 04:44	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524180	09/10/21 22:21	K1S	TAL SAC

**Client Sample ID: MW-6-20**

**Lab Sample ID: 320-78303-9**

Date Collected: 08/24/21 11:35

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			275.1 mL	10.0 mL	521959	09/02/21 04:44	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524180	09/10/21 22:30	K1S	TAL SAC

**Client Sample ID: MW-7-20**

**Lab Sample ID: 320-78303-10**

Date Collected: 08/24/21 12:56

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			275.6 mL	10.0 mL	521959	09/02/21 04:44	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524180	09/10/21 22:59	K1S	TAL SAC

**Client Sample ID: MW-4-20**

**Lab Sample ID: 320-78303-11**

Date Collected: 08/24/21 13:57

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274.3 mL	10.0 mL	521959	09/02/21 04:44	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524180	09/10/21 23:08	K1S	TAL SAC

**Client Sample ID: MW-5-20**

**Lab Sample ID: 320-78303-12**

Date Collected: 08/24/21 15:44

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			273.7 mL	10.0 mL	521960	09/02/21 05:04	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522786	09/06/21 06:20	RS1	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

## Client Sample ID: MW-8-20

Lab Sample ID: 320-78303-13

Date Collected: 08/25/21 09:08

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			267.2 mL	10.0 mL	521960	09/02/21 05:04	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522786	09/06/21 06:30	RS1	TAL SAC

## Client Sample ID: MW-10-20

Lab Sample ID: 320-78303-14

Date Collected: 08/25/21 10:19

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.8 mL	10.0 mL	521960	09/02/21 05:04	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522786	09/06/21 06:39	RS1	TAL SAC

## Client Sample ID: MW-9-30

Lab Sample ID: 320-78303-15

Date Collected: 08/25/21 11:18

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			267 mL	10.0 mL	521960	09/02/21 05:04	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522786	09/06/21 06:49	RS1	TAL SAC

## Client Sample ID: MW-109-30

Lab Sample ID: 320-78303-16

Date Collected: 08/25/21 11:08

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.9 mL	10.0 mL	521960	09/02/21 05:04	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522786	09/06/21 06:58	RS1	TAL SAC

## Client Sample ID: MW-11-15

Lab Sample ID: 320-78303-17

Date Collected: 08/27/21 09:25

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.3 mL	10.0 mL	521960	09/02/21 05:04	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522786	09/06/21 07:08	RS1	TAL SAC

## Client Sample ID: MW-12-10

Lab Sample ID: 320-78303-18

Date Collected: 08/27/21 10:34

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			272.7 mL	10.0 mL	521960	09/02/21 05:04	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522786	09/06/21 07:17	RS1	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

## Client Sample ID: MW-112-10

## Lab Sample ID: 320-78303-19

Date Collected: 08/27/21 10:24

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.4 mL	10.0 mL	521960	09/02/21 05:04	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522786	09/06/21 07:45	RS1	TAL SAC

## Client Sample ID: EB-12-10

## Lab Sample ID: 320-78303-20

Date Collected: 08/27/21 11:20

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.6 mL	10.0 mL	521960	09/02/21 05:04	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522786	09/06/21 07:55	RS1	TAL SAC

## Client Sample ID: GAC

## Lab Sample ID: 320-78303-21

Date Collected: 08/27/21 12:25

Matrix: Water

Date Received: 08/31/21 15:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			266 mL	10.0 mL	523724	09/10/21 04:46	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524271	09/11/21 18:10	D1R	TAL SAC

### Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

## Laboratory: Eurofins TestAmerica, Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

1

2

3

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5

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15

# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	TAL SAC TAL SAC

**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: GST MWs

Job ID: 320-78303-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-78303-1	MW-1-15	Water	08/23/21 12:49	08/31/21 15:39
320-78303-2	MW-1-40	Water	08/23/21 13:54	08/31/21 15:39
320-78303-3	MW-2-30	Water	08/23/21 15:20	08/31/21 15:39
320-78303-4	MW-2-20	Water	08/23/21 15:51	08/31/21 15:39
320-78303-5	MW-102-20	Water	08/23/21 15:41	08/31/21 15:39
320-78303-6	MW-3-40	Water	08/24/21 09:44	08/31/21 15:39
320-78303-7	MW-103-40	Water	08/24/21 09:34	08/31/21 15:39
320-78303-8	MW-3-15	Water	08/24/21 10:30	08/31/21 15:39
320-78303-9	MW-6-20	Water	08/24/21 11:35	08/31/21 15:39
320-78303-10	MW-7-20	Water	08/24/21 12:56	08/31/21 15:39
320-78303-11	MW-4-20	Water	08/24/21 13:57	08/31/21 15:39
320-78303-12	MW-5-20	Water	08/24/21 15:44	08/31/21 15:39
320-78303-13	MW-8-20	Water	08/25/21 09:08	08/31/21 15:39
320-78303-14	MW-10-20	Water	08/25/21 10:19	08/31/21 15:39
320-78303-15	MW-9-30	Water	08/25/21 11:18	08/31/21 15:39
320-78303-16	MW-109-30	Water	08/25/21 11:08	08/31/21 15:39
320-78303-17	MW-11-15	Water	08/27/21 09:25	08/31/21 15:39
320-78303-18	MW-12-10	Water	08/27/21 10:34	08/31/21 15:39
320-78303-19	MW-112-10	Water	08/27/21 10:24	08/31/21 15:39
320-78303-20	EB-12-10	Water	08/27/21 11:20	08/31/21 15:39
320-78303-21	GAC	Water	08/27/21 12:25	08/31/21 15:39




# CHAIN-OF-CUSTODY RECORD

Analytical Methods (include preservative if used)

Turn-Around Time:  
 Normal  Rush  
 Please Specify

Quote No.:  
 MSA Number:  
 J-Flags:  Yes  No

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-1-15		1249	8-23-21	2	 320-78303 Chain of Custody
MW-1-40		1354		2	
MW-2-30		1520		2	
MW-2-20		1551		2	
MW-102-20		1541		2	
MW-3-90		044	8-24-21	2	
MW-103-40		939		2	
MW-3-15		1030		2	
MW-6-20		1135		2	Groundwater
MW-7-20		1256		2	

Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Number: <u>102599-012</u> Name: <u>GST MWs</u> Contact: <u>KRF</u> Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Sampler: <u>SKR</u>	Total No. of Containers: <u>42</u> COC Seals/Intact? <u>Y/N/A</u> Received Good Cond./Cold Temp: Delivery Method:	Signature: <u>[Signature]</u> Printed Name: <u>Justin Risley</u> Date: <u>8-23-21</u> Company: <u>SW</u>	Signature: Printed Name: Date: Company:	Signature: Printed Name: Date: Company:
Notes:				
Received By: 1. <u>[Signature]</u> Time: <u>5:57</u> Printed Name: <u>Danella</u> Date: <u>8/24/21</u> Company: <u>SW</u>				
Received By: 2. <u>[Signature]</u> Time: _____ Printed Name: _____ Date: _____ Company: _____				
Received By: 3. <u>[Signature]</u> Time: _____ Printed Name: _____ Date: _____ Company: _____				

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file





# CHAIN-OF-CUSTODY RECORD

Analytical Methods (include preservative if used)

Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers	2	ground water
		2	
2		2	
2		2	
2		2	
2		2	
2		2	
2		2	
2		2	
2		2	

Quote No: \_\_\_\_\_  
 MSA Number: \_\_\_\_\_  
 J-Flags:  Yes  No

Turn Around Time:  
 Normal  Rush  
 Please Specify \_\_\_\_\_

Sample Identity	Lab No.	Time	Date Sampled
MW-4-20		1357	8-24-21
MW-5-20		1544	8-25-21
MW-8-20		908	8-25-21
MW-10-20		1014	
MW-9-30		1118	
MW-10-9-30		1108	
MW-11-15		925	8-27-21
MW-12-15		1039	
MW-112-10		1024	
EB-12-10		1120	

**Project Information**

Number: \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Ongoing Project? Yes  No   
 Sampler: \_\_\_\_\_

**Sample Receipt**

Total No. of Containers: FF  
 COG Seals/Intact? Y/N/A FF  
 Received Good Cond/Cold FF  
 Temp: \_\_\_\_\_  
 Delivery Method: \_\_\_\_\_

**Notes:**

\_\_\_\_\_

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: <u>[Signature]</u> Printed Name: <u>Judith Kirsley</u> Company: <u>SrW</u>	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____
Time: <u>1130</u> Date: <u>8-30-21</u>	Time: _____ Date: _____	Time: _____ Date: _____
Received By: 1. Signature: <u>[Signature]</u> Printed Name: <u>[Name]</u> Company: _____	Received By: 2. Signature: _____ Printed Name: _____ Company: _____	Received By: 3. Signature: _____ Printed Name: _____ Company: _____
Time: <u>1154</u> Date: <u>8/31/21</u>	Time: _____ Date: _____	Time: _____ Date: _____





# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-78303-1

**Login Number: 78303**

**List Source: Eurofins TestAmerica, Sacramento**

**List Number: 1**

**Creator: Her, David A**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1519212
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Laboratory Data Review Checklist

Completed By:

Veselina Yakimova

Title:

Geologist

Date:

November 23, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-78303-1

Laboratory Report Date:

9/15/2021

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

Laboratory Report Date:

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

Analyses were performed by the Eurofins Laboratory in West Sacramento, CA. The laboratory is approved by the DEC CS program and certified under the Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP) for the requested analyses.

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

The samples were not transferred to a network laboratory or subcontracted out.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

Samples do not require preservation other than temperature.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form notes that the samples arrived in good condition.

Laboratory Report Date:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes  No  N/A  Comments:

The sample receipt does not indicate any discrepancies.

- e. Data quality or usability affected?

Comments:

The data quality/usability is not affected.

#### 4. Case Narrative

- a. Present and understandable?

Yes  No  N/A  Comments:

- b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. *MW-3-15* (PFHxS) and *MW-4-20* (PFHxS)

Method EPA 537(Mod): Results for samples *MW-2-20* and *MW-102-20* were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batches 320-521959, 320-521960, and 320-523724.

Method 3535: The following samples contained floating particulates in the sample bottle prior to extraction: *MW-4-20*, *MW-6-20*, *MW-7-20*, *MW-3-15*, *MW-103-40*, and *MW-1-40*.

Method 3535: The following samples were yellow prior to extraction: *MW-10-20*, *MW-9-30*, *MW-109-30*, *MW-8-20*, *MW-12-10*, and *MW-112-10*.

Method 3535: The following samples were slightly yellow prior to extraction: *MW-7-20*, *MW-4-20*, *MW-3-15*, *MW-3-40*, *MW-103-40*, *MW-1-40*, and *MW-2-30*.

Laboratory Report Date:

c. Were all corrective actions documented?

Yes  No  N/A  Comments:

Samples *MW-2-20* and *MW-102-20* were diluted due to the concentrations of target analytes exceeding the instrument's calibration range. The laboratory corrected the internal standard counts with the dilution factors. These results are unaffected.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The laboratory applied the 'I' qualifier to results affected by transition mass ratio failures. The case narrative notes that these results may have some high bias. The results for *MW-3-15* (PFHxS) and *MW-4-20* (PFHxS) are considered biased high, flagged with a "JH" in the analytical table.

## 5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

The reporting limits (RLs) are less than the applicable DEC regulatory limits for the reported PFAS.

e. Data quality or usability affected?

The data quality/usability is not affected.

Laboratory Report Date:

6. QC Samples

## a. Method Blank

- i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

- ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

- iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; target PFAS were not detected in the method blank sample.

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

The samples were not affected by laboratory contamination; see above.

- v. Data quality or usability affected?

Comments:

The data quality/usability is not affected.

## b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A  Comments:

- ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals/Inorganics analyses were not requested for this work order.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:



Laboratory Report Date:

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; method accuracy and precision were demonstrated to be within acceptable limits.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

Qualification was not required; see above.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality/usability is not affected.

- c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

- i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

MS/MSD samples were not analyzed with this work order; however, the laboratory analyzed LCS and LCSD samples to assess method accuracy and precision.

- ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals/Inorganics analyses were not requested for this work order.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

Laboratory Report Date:

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; MS and MSD samples were not analyzed for this work order.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality/usability is not affected.

- d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes  No  N/A  Comments:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A  Comments:

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

There were no IDA recovery failures for the reported results.

- iv. Data quality or usability affected?

Comments:

The data quality/usability is not affected.

Laboratory Report Date:

## e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?  
(If not, enter explanation below.)

Yes  No  N/A  Comments:

PFAS are not volatile compounds. A trip blank is not required for the requested analysis.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?  
(If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

- iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; a trip blank is not required for the requested analysis.

- v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

## f. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

- ii. Submitted blind to lab?

Yes  No  N/A  Comments:

The field duplicate pairs *MW-2-20 / MW-102-20*, *MW-3-40 / MW-103-40*, *MW-9-30 / MW-109-30* and *MW-12-10 / MW-112-10* were submitted with this work order.

Laboratory Report Date:

- iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration  
 $R_2$  = Field Duplicate Concentration

Yes  No  N/A  Comments:

The relative precision demonstrated between the PFBS and PFOS results for the duplicate pair *MW-12-10 / MW-112-10* is above the recommended limits.

- iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The PFOS results for *MW-12-10* and *MW-112-10* are flagged with a “J” to note the RPD discrepancy.  
The PFBS results for *MW-12-10 / MW-112-10* are already flagged with a “J” due to concentrations below the LOQ. No further qualification is required.

- g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

EB-12-10 was submitted with the project samples.

- i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

None of the requested analytes were detected in the EB sample.

- ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

- iii. Data quality or usability affected?

Comments:

The data quality/usability is not affected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

- a. Defined and appropriate?

Yes  No  N/A  Comments:

The perfluorohexanesulfonic acid (PFHxS) results of samples *MW-3-15* and *MW-4-20* were affected by transition mass ratio failures and were manually quantified. We consider these results estimated, biased high per the case narrative, and have applied the ‘JH\*’ qualifier.

## ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

Laboratory Job ID: 320-81056-1  
Client Project/Site: Q4 GST MWs

**For:**

Shannon & Wilson, Inc  
2355 Hill Rd.  
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger



---

Authorized for release by:  
11/10/2021 1:38:17 PM

David Alltucker, Project Manager I  
(916)374-4383  
[David.Alltucker@Eurofinset.com](mailto:David.Alltucker@Eurofinset.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:

[www.eurofinsus.com/Env](http://www.eurofinsus.com/Env)

*The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

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## Job ID: 320-81056-1

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### Laboratory: Eurofins TestAmerica, Sacramento

#### Narrative

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#### Job Narrative 320-81056-1

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#### Receipt

The samples were received on 10/29/2021 3:04 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.3° C.

#### LCMS

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte.

Method EPA 537(Mod): Results for samples MW-2-20 (320-81056-13) and MW-102-20 (320-81056-14) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-539428.

Method 3535: The following samples contained a thin layer of sediment at the bottom of the bottle prior to extraction: MW-10-20 (320-81056-1), MW-9-30 (320-81056-2), MW-109-30 (320-81056-3), MW-7-20 (320-81056-4), MW-8-20 (320-81056-5), MW-4-20 (320-81056-6), MW-5-20 (320-81056-7), MW-3-15 (320-81056-8), MW-3-40 (320-81056-9), MW-1-15 (320-81056-10), MW-1-40 (320-81056-11) and MW-2-30 (320-81056-12).  
preparation batch 320-539428

Method 3535: The following samples were slightly yellow prior to extraction: MW-10-20 (320-81056-1), MW-9-30 (320-81056-2), MW-109-30 (320-81056-3), MW-7-20 (320-81056-4), MW-8-20 (320-81056-5), MW-4-20 (320-81056-6), MW-3-15 (320-81056-8), MW-3-40 (320-81056-9), MW-1-40 (320-81056-11) and MW-2-30 (320-81056-12).  
preparation batch 320-539428

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

## Client Sample ID: MW-10-20

## Lab Sample ID: 320-81056-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	6.4		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.9		1.8	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.1	J	1.8	0.76	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.38	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.4		1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	81		1.8	0.48	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-9-30

## Lab Sample ID: 320-81056-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	7.7		1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.9		1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	0.78	J	1.8	0.78	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.65	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	10		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	37		1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-109-30

## Lab Sample ID: 320-81056-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	7.5		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.9		1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	0.87	J	1.9	0.79	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.78	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	9.9		1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	37		1.9	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-7-20

## Lab Sample ID: 320-81056-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.8	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.61	J	1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.6		1.9	0.79	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.21	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.67	J	1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	14		1.9	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-8-20

## Lab Sample ID: 320-81056-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	2.3		1.8	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-4-20

## Lab Sample ID: 320-81056-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.55	J	1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-5-20

## Lab Sample ID: 320-81056-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.81	J	1.8	0.78	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.41	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.88	J	1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.6		1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

## Client Sample ID: MW-3-15

## Lab Sample ID: 320-81056-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.61	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.45	J I	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.8		1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.7		1.9	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-3-40

## Lab Sample ID: 320-81056-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.8	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.1	J	1.9	0.79	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.0	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	12		1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	12		1.9	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-1-15

## Lab Sample ID: 320-81056-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.76	J	1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-1-40

## Lab Sample ID: 320-81056-11

No Detections.

## Client Sample ID: MW-2-30

## Lab Sample ID: 320-81056-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.54	J I	1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.51	J	1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-2-20

## Lab Sample ID: 320-81056-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	93		1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	49		1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	24		1.8	0.77	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	7.0		1.8	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.72	J	1.8	0.28	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.6		1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	40		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	360		9.1	2.4	ng/L	5		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-102-20

## Lab Sample ID: 320-81056-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	90		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	44		1.8	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	24		1.8	0.76	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	6.5		1.8	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.7		1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	39		1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	330		9.0	2.4	ng/L	5		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

**Client Sample ID: MW-6-20**

**Lab Sample ID: 320-81056-15**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.1	J	1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

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- 14
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# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

**Client Sample ID: MW-10-20**

**Lab Sample ID: 320-81056-1**

Date Collected: 10/25/21 12:27

Matrix: Water

Date Received: 10/29/21 15:04

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	6.4		1.8	0.52	ng/L		11/03/21 07:07	11/07/21 10:48	1
Perfluoroheptanoic acid (PFHpA)	2.9		1.8	0.22	ng/L		11/03/21 07:07	11/07/21 10:48	1
Perfluorooctanoic acid (PFOA)	1.1	J	1.8	0.76	ng/L		11/03/21 07:07	11/07/21 10:48	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/03/21 07:07	11/07/21 10:48	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/03/21 07:07	11/07/21 10:48	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		11/03/21 07:07	11/07/21 10:48	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		11/03/21 07:07	11/07/21 10:48	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/03/21 07:07	11/07/21 10:48	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/03/21 07:07	11/07/21 10:48	1
Perfluorobutanesulfonic acid (PFBS)	0.38	J	1.8	0.18	ng/L		11/03/21 07:07	11/07/21 10:48	1
Perfluorohexanesulfonic acid (PFHxS)	8.4		1.8	0.51	ng/L		11/03/21 07:07	11/07/21 10:48	1
Perfluorooctanesulfonic acid (PFOS)	81		1.8	0.48	ng/L		11/03/21 07:07	11/07/21 10:48	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/03/21 07:07	11/07/21 10:48	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/03/21 07:07	11/07/21 10:48	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/03/21 07:07	11/07/21 10:48	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		11/03/21 07:07	11/07/21 10:48	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/03/21 07:07	11/07/21 10:48	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/03/21 07:07	11/07/21 10:48	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	85		50 - 150	11/03/21 07:07	11/07/21 10:48	1
13C4 PFHpA	90		50 - 150	11/03/21 07:07	11/07/21 10:48	1
13C4 PFOA	99		50 - 150	11/03/21 07:07	11/07/21 10:48	1
13C5 PFNA	93		50 - 150	11/03/21 07:07	11/07/21 10:48	1
13C2 PFDA	90		50 - 150	11/03/21 07:07	11/07/21 10:48	1
13C2 PFUnA	93		50 - 150	11/03/21 07:07	11/07/21 10:48	1
13C2 PFDoA	95		50 - 150	11/03/21 07:07	11/07/21 10:48	1
13C2 PFTeDA	90		50 - 150	11/03/21 07:07	11/07/21 10:48	1
13C3 PFBS	90		50 - 150	11/03/21 07:07	11/07/21 10:48	1
18O2 PFHxS	83		50 - 150	11/03/21 07:07	11/07/21 10:48	1
13C4 PFOS	89		50 - 150	11/03/21 07:07	11/07/21 10:48	1
d3-NMeFOSAA	99		50 - 150	11/03/21 07:07	11/07/21 10:48	1
d5-NEtFOSAA	96		50 - 150	11/03/21 07:07	11/07/21 10:48	1
13C3 HFPO-DA	81		50 - 150	11/03/21 07:07	11/07/21 10:48	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

**Client Sample ID: MW-9-30**

**Lab Sample ID: 320-81056-2**

Date Collected: 10/25/21 13:56

Matrix: Water

Date Received: 10/29/21 15:04

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	7.7		1.8	0.53	ng/L		11/03/21 07:07	11/07/21 10:58	1
Perfluoroheptanoic acid (PFHpA)	2.9		1.8	0.23	ng/L		11/03/21 07:07	11/07/21 10:58	1
Perfluorooctanoic acid (PFOA)	0.78	J	1.8	0.78	ng/L		11/03/21 07:07	11/07/21 10:58	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/03/21 07:07	11/07/21 10:58	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/03/21 07:07	11/07/21 10:58	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/03/21 07:07	11/07/21 10:58	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/03/21 07:07	11/07/21 10:58	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/03/21 07:07	11/07/21 10:58	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		11/03/21 07:07	11/07/21 10:58	1
Perfluorobutanesulfonic acid (PFBS)	0.65	J	1.8	0.18	ng/L		11/03/21 07:07	11/07/21 10:58	1
Perfluorohexanesulfonic acid (PFHxS)	10		1.8	0.52	ng/L		11/03/21 07:07	11/07/21 10:58	1
Perfluorooctanesulfonic acid (PFOS)	37		1.8	0.49	ng/L		11/03/21 07:07	11/07/21 10:58	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/03/21 07:07	11/07/21 10:58	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/03/21 07:07	11/07/21 10:58	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/03/21 07:07	11/07/21 10:58	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/03/21 07:07	11/07/21 10:58	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/03/21 07:07	11/07/21 10:58	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		11/03/21 07:07	11/07/21 10:58	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	85		50 - 150	11/03/21 07:07	11/07/21 10:58	1
13C4 PFHpA	89		50 - 150	11/03/21 07:07	11/07/21 10:58	1
13C4 PFOA	99		50 - 150	11/03/21 07:07	11/07/21 10:58	1
13C5 PFNA	94		50 - 150	11/03/21 07:07	11/07/21 10:58	1
13C2 PFDA	93		50 - 150	11/03/21 07:07	11/07/21 10:58	1
13C2 PFUnA	91		50 - 150	11/03/21 07:07	11/07/21 10:58	1
13C2 PFDoA	95		50 - 150	11/03/21 07:07	11/07/21 10:58	1
13C2 PFTeDA	88		50 - 150	11/03/21 07:07	11/07/21 10:58	1
13C3 PFBS	87		50 - 150	11/03/21 07:07	11/07/21 10:58	1
18O2 PFHxS	83		50 - 150	11/03/21 07:07	11/07/21 10:58	1
13C4 PFOS	90		50 - 150	11/03/21 07:07	11/07/21 10:58	1
d3-NMeFOSAA	98		50 - 150	11/03/21 07:07	11/07/21 10:58	1
d5-NEtFOSAA	92		50 - 150	11/03/21 07:07	11/07/21 10:58	1
13C3 HFPO-DA	80		50 - 150	11/03/21 07:07	11/07/21 10:58	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

**Client Sample ID: MW-109-30**

**Lab Sample ID: 320-81056-3**

Date Collected: 10/25/21 13:46

Matrix: Water

Date Received: 10/29/21 15:04

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	7.5		1.9	0.54	ng/L		11/03/21 07:07	11/07/21 11:08	1
Perfluoroheptanoic acid (PFHpA)	2.9		1.9	0.23	ng/L		11/03/21 07:07	11/07/21 11:08	1
Perfluorooctanoic acid (PFOA)	0.87	J	1.9	0.79	ng/L		11/03/21 07:07	11/07/21 11:08	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/03/21 07:07	11/07/21 11:08	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/03/21 07:07	11/07/21 11:08	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/03/21 07:07	11/07/21 11:08	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		11/03/21 07:07	11/07/21 11:08	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/03/21 07:07	11/07/21 11:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		11/03/21 07:07	11/07/21 11:08	1
Perfluorobutanesulfonic acid (PFBS)	0.78	J	1.9	0.19	ng/L		11/03/21 07:07	11/07/21 11:08	1
Perfluorohexanesulfonic acid (PFHxS)	9.9		1.9	0.53	ng/L		11/03/21 07:07	11/07/21 11:08	1
Perfluorooctanesulfonic acid (PFOS)	37		1.9	0.50	ng/L		11/03/21 07:07	11/07/21 11:08	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		11/03/21 07:07	11/07/21 11:08	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		11/03/21 07:07	11/07/21 11:08	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		11/03/21 07:07	11/07/21 11:08	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/03/21 07:07	11/07/21 11:08	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/03/21 07:07	11/07/21 11:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		11/03/21 07:07	11/07/21 11:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	81		50 - 150	11/03/21 07:07	11/07/21 11:08	1
13C4 PFHpA	91		50 - 150	11/03/21 07:07	11/07/21 11:08	1
13C4 PFOA	98		50 - 150	11/03/21 07:07	11/07/21 11:08	1
13C5 PFNA	94		50 - 150	11/03/21 07:07	11/07/21 11:08	1
13C2 PFDA	95		50 - 150	11/03/21 07:07	11/07/21 11:08	1
13C2 PFUnA	89		50 - 150	11/03/21 07:07	11/07/21 11:08	1
13C2 PFDoA	94		50 - 150	11/03/21 07:07	11/07/21 11:08	1
13C2 PFTeDA	87		50 - 150	11/03/21 07:07	11/07/21 11:08	1
13C3 PFBS	85		50 - 150	11/03/21 07:07	11/07/21 11:08	1
18O2 PFHxS	83		50 - 150	11/03/21 07:07	11/07/21 11:08	1
13C4 PFOS	87		50 - 150	11/03/21 07:07	11/07/21 11:08	1
d3-NMeFOSAA	95		50 - 150	11/03/21 07:07	11/07/21 11:08	1
d5-NEtFOSAA	97		50 - 150	11/03/21 07:07	11/07/21 11:08	1
13C3 HFPO-DA	79		50 - 150	11/03/21 07:07	11/07/21 11:08	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

**Client Sample ID: MW-7-20**

**Lab Sample ID: 320-81056-4**

Date Collected: 10/25/21 15:00

Matrix: Water

Date Received: 10/29/21 15:04

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	1.8	J	1.9	0.54	ng/L		11/03/21 07:07	11/07/21 11:18	1
Perfluoroheptanoic acid (PFHpA)	0.61	J	1.9	0.23	ng/L		11/03/21 07:07	11/07/21 11:18	1
Perfluorooctanoic acid (PFOA)	2.6		1.9	0.79	ng/L		11/03/21 07:07	11/07/21 11:18	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/03/21 07:07	11/07/21 11:18	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/03/21 07:07	11/07/21 11:18	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/03/21 07:07	11/07/21 11:18	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		11/03/21 07:07	11/07/21 11:18	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/03/21 07:07	11/07/21 11:18	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		11/03/21 07:07	11/07/21 11:18	1
Perfluorobutanesulfonic acid (PFBS)	0.21	J	1.9	0.19	ng/L		11/03/21 07:07	11/07/21 11:18	1
Perfluorohexanesulfonic acid (PFHxS)	0.67	J	1.9	0.53	ng/L		11/03/21 07:07	11/07/21 11:18	1
Perfluorooctanesulfonic acid (PFOS)	14		1.9	0.50	ng/L		11/03/21 07:07	11/07/21 11:18	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/03/21 07:07	11/07/21 11:18	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/03/21 07:07	11/07/21 11:18	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		11/03/21 07:07	11/07/21 11:18	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/03/21 07:07	11/07/21 11:18	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/03/21 07:07	11/07/21 11:18	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		11/03/21 07:07	11/07/21 11:18	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		50 - 150	11/03/21 07:07	11/07/21 11:18	1
13C4 PFHpA	98		50 - 150	11/03/21 07:07	11/07/21 11:18	1
13C4 PFOA	100		50 - 150	11/03/21 07:07	11/07/21 11:18	1
13C5 PFNA	98		50 - 150	11/03/21 07:07	11/07/21 11:18	1
13C2 PFDA	91		50 - 150	11/03/21 07:07	11/07/21 11:18	1
13C2 PFUnA	91		50 - 150	11/03/21 07:07	11/07/21 11:18	1
13C2 PFDoA	97		50 - 150	11/03/21 07:07	11/07/21 11:18	1
13C2 PFTeDA	96		50 - 150	11/03/21 07:07	11/07/21 11:18	1
13C3 PFBS	89		50 - 150	11/03/21 07:07	11/07/21 11:18	1
18O2 PFHxS	89		50 - 150	11/03/21 07:07	11/07/21 11:18	1
13C4 PFOS	95		50 - 150	11/03/21 07:07	11/07/21 11:18	1
d3-NMeFOSAA	95		50 - 150	11/03/21 07:07	11/07/21 11:18	1
d5-NEtFOSAA	92		50 - 150	11/03/21 07:07	11/07/21 11:18	1
13C3 HFPO-DA	90		50 - 150	11/03/21 07:07	11/07/21 11:18	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

**Client Sample ID: MW-8-20**

**Lab Sample ID: 320-81056-5**

**Date Collected: 10/25/21 11:00**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/03/21 07:07	11/07/21 11:28	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/03/21 07:07	11/07/21 11:28	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		11/03/21 07:07	11/07/21 11:28	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/03/21 07:07	11/07/21 11:28	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		11/03/21 07:07	11/07/21 11:28	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/03/21 07:07	11/07/21 11:28	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		11/03/21 07:07	11/07/21 11:28	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/03/21 07:07	11/07/21 11:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		11/03/21 07:07	11/07/21 11:28	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/03/21 07:07	11/07/21 11:28	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/03/21 07:07	11/07/21 11:28	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>2.3</b>		1.8	0.50	ng/L		11/03/21 07:07	11/07/21 11:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/03/21 07:07	11/07/21 11:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/03/21 07:07	11/07/21 11:28	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/03/21 07:07	11/07/21 11:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/03/21 07:07	11/07/21 11:28	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/03/21 07:07	11/07/21 11:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		11/03/21 07:07	11/07/21 11:28	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		50 - 150	11/03/21 07:07	11/07/21 11:28	1
13C4 PFHpA	96		50 - 150	11/03/21 07:07	11/07/21 11:28	1
13C4 PFOA	100		50 - 150	11/03/21 07:07	11/07/21 11:28	1
13C5 PFNA	98		50 - 150	11/03/21 07:07	11/07/21 11:28	1
13C2 PFDA	94		50 - 150	11/03/21 07:07	11/07/21 11:28	1
13C2 PFUnA	96		50 - 150	11/03/21 07:07	11/07/21 11:28	1
13C2 PFDoA	96		50 - 150	11/03/21 07:07	11/07/21 11:28	1
13C2 PFTeDA	103		50 - 150	11/03/21 07:07	11/07/21 11:28	1
13C3 PFBS	98		50 - 150	11/03/21 07:07	11/07/21 11:28	1
18O2 PFHxS	92		50 - 150	11/03/21 07:07	11/07/21 11:28	1
13C4 PFOS	99		50 - 150	11/03/21 07:07	11/07/21 11:28	1
d3-NMeFOSAA	97		50 - 150	11/03/21 07:07	11/07/21 11:28	1
d5-NEtFOSAA	105		50 - 150	11/03/21 07:07	11/07/21 11:28	1
13C3 HFPO-DA	90		50 - 150	11/03/21 07:07	11/07/21 11:28	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

**Client Sample ID: MW-4-20**

**Lab Sample ID: 320-81056-6**

Date Collected: 10/25/21 16:22

Matrix: Water

Date Received: 10/29/21 15:04

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		11/03/21 07:07	11/07/21 11:38	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		11/03/21 07:07	11/07/21 11:38	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		11/03/21 07:07	11/07/21 11:38	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/03/21 07:07	11/07/21 11:38	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/03/21 07:07	11/07/21 11:38	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		11/03/21 07:07	11/07/21 11:38	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		11/03/21 07:07	11/07/21 11:38	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/03/21 07:07	11/07/21 11:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/03/21 07:07	11/07/21 11:38	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/03/21 07:07	11/07/21 11:38	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.55</b>	<b>J</b>	1.8	0.51	ng/L		11/03/21 07:07	11/07/21 11:38	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/03/21 07:07	11/07/21 11:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/03/21 07:07	11/07/21 11:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/03/21 07:07	11/07/21 11:38	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/03/21 07:07	11/07/21 11:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		11/03/21 07:07	11/07/21 11:38	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/03/21 07:07	11/07/21 11:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/03/21 07:07	11/07/21 11:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		50 - 150	11/03/21 07:07	11/07/21 11:38	1
13C4 PFHpA	90		50 - 150	11/03/21 07:07	11/07/21 11:38	1
13C4 PFOA	103		50 - 150	11/03/21 07:07	11/07/21 11:38	1
13C5 PFNA	101		50 - 150	11/03/21 07:07	11/07/21 11:38	1
13C2 PFDA	91		50 - 150	11/03/21 07:07	11/07/21 11:38	1
13C2 PFUnA	98		50 - 150	11/03/21 07:07	11/07/21 11:38	1
13C2 PFDoA	98		50 - 150	11/03/21 07:07	11/07/21 11:38	1
13C2 PFTeDA	95		50 - 150	11/03/21 07:07	11/07/21 11:38	1
13C3 PFBS	91		50 - 150	11/03/21 07:07	11/07/21 11:38	1
18O2 PFHxS	92		50 - 150	11/03/21 07:07	11/07/21 11:38	1
13C4 PFOS	91		50 - 150	11/03/21 07:07	11/07/21 11:38	1
d3-NMeFOSAA	100		50 - 150	11/03/21 07:07	11/07/21 11:38	1
d5-NEtFOSAA	98		50 - 150	11/03/21 07:07	11/07/21 11:38	1
13C3 HFPO-DA	86		50 - 150	11/03/21 07:07	11/07/21 11:38	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

**Client Sample ID: MW-5-20**

**Lab Sample ID: 320-81056-7**

**Date Collected: 10/25/21 17:19**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/03/21 07:07	11/07/21 11:48	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/03/21 07:07	11/07/21 11:48	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>0.81</b>	<b>J</b>	1.8	0.78	ng/L		11/03/21 07:07	11/07/21 11:48	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/03/21 07:07	11/07/21 11:48	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/03/21 07:07	11/07/21 11:48	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/03/21 07:07	11/07/21 11:48	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/03/21 07:07	11/07/21 11:48	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/03/21 07:07	11/07/21 11:48	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		11/03/21 07:07	11/07/21 11:48	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.41</b>	<b>J</b>	1.8	0.18	ng/L		11/03/21 07:07	11/07/21 11:48	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.88</b>	<b>J</b>	1.8	0.52	ng/L		11/03/21 07:07	11/07/21 11:48	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>3.6</b>		1.8	0.49	ng/L		11/03/21 07:07	11/07/21 11:48	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/03/21 07:07	11/07/21 11:48	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/03/21 07:07	11/07/21 11:48	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/03/21 07:07	11/07/21 11:48	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/03/21 07:07	11/07/21 11:48	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/03/21 07:07	11/07/21 11:48	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		11/03/21 07:07	11/07/21 11:48	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C2 PFHxA	85		50 - 150				11/03/21 07:07	11/07/21 11:48	1
13C4 PFHpA	95		50 - 150				11/03/21 07:07	11/07/21 11:48	1
13C4 PFOA	105		50 - 150				11/03/21 07:07	11/07/21 11:48	1
13C5 PFNA	98		50 - 150				11/03/21 07:07	11/07/21 11:48	1
13C2 PFDA	93		50 - 150				11/03/21 07:07	11/07/21 11:48	1
13C2 PFUnA	98		50 - 150				11/03/21 07:07	11/07/21 11:48	1
13C2 PFDoA	100		50 - 150				11/03/21 07:07	11/07/21 11:48	1
13C2 PFTeDA	98		50 - 150				11/03/21 07:07	11/07/21 11:48	1
13C3 PFBS	101		50 - 150				11/03/21 07:07	11/07/21 11:48	1
18O2 PFHxS	91		50 - 150				11/03/21 07:07	11/07/21 11:48	1
13C4 PFOS	98		50 - 150				11/03/21 07:07	11/07/21 11:48	1
d3-NMeFOSAA	92		50 - 150				11/03/21 07:07	11/07/21 11:48	1
d5-NEtFOSAA	96		50 - 150				11/03/21 07:07	11/07/21 11:48	1
13C3 HFPO-DA	82		50 - 150				11/03/21 07:07	11/07/21 11:48	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

**Client Sample ID: MW-3-15**

**Lab Sample ID: 320-81056-8**

Date Collected: 10/26/21 09:41

Matrix: Water

Date Received: 10/29/21 15:04

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>0.61</b>	<b>J</b>	1.9	0.54	ng/L		11/03/21 07:07	11/07/21 12:19	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		11/03/21 07:07	11/07/21 12:19	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		11/03/21 07:07	11/07/21 12:19	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/03/21 07:07	11/07/21 12:19	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/03/21 07:07	11/07/21 12:19	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/03/21 07:07	11/07/21 12:19	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		11/03/21 07:07	11/07/21 12:19	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/03/21 07:07	11/07/21 12:19	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		11/03/21 07:07	11/07/21 12:19	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.45</b>	<b>J I</b>	1.9	0.19	ng/L		11/03/21 07:07	11/07/21 12:19	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>5.8</b>		1.9	0.53	ng/L		11/03/21 07:07	11/07/21 12:19	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>2.7</b>		1.9	0.50	ng/L		11/03/21 07:07	11/07/21 12:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/03/21 07:07	11/07/21 12:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/03/21 07:07	11/07/21 12:19	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		11/03/21 07:07	11/07/21 12:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/03/21 07:07	11/07/21 12:19	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/03/21 07:07	11/07/21 12:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		11/03/21 07:07	11/07/21 12:19	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C2 PFHxA	93		50 - 150				11/03/21 07:07	11/07/21 12:19	1
13C4 PFHpA	99		50 - 150				11/03/21 07:07	11/07/21 12:19	1
13C4 PFOA	101		50 - 150				11/03/21 07:07	11/07/21 12:19	1
13C5 PFNA	103		50 - 150				11/03/21 07:07	11/07/21 12:19	1
13C2 PFDA	101		50 - 150				11/03/21 07:07	11/07/21 12:19	1
13C2 PFUnA	100		50 - 150				11/03/21 07:07	11/07/21 12:19	1
13C2 PFDoA	105		50 - 150				11/03/21 07:07	11/07/21 12:19	1
13C2 PFTeDA	104		50 - 150				11/03/21 07:07	11/07/21 12:19	1
13C3 PFBS	98		50 - 150				11/03/21 07:07	11/07/21 12:19	1
18O2 PFHxS	94		50 - 150				11/03/21 07:07	11/07/21 12:19	1
13C4 PFOS	104		50 - 150				11/03/21 07:07	11/07/21 12:19	1
d3-NMeFOSAA	106		50 - 150				11/03/21 07:07	11/07/21 12:19	1
d5-NEtFOSAA	106		50 - 150				11/03/21 07:07	11/07/21 12:19	1
13C3 HFPO-DA	84		50 - 150				11/03/21 07:07	11/07/21 12:19	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

**Client Sample ID: MW-3-40**

**Lab Sample ID: 320-81056-9**

Date Collected: 10/26/21 10:38

Matrix: Water

Date Received: 10/29/21 15:04

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>1.8</b>	<b>J</b>	1.9	0.54	ng/L		11/03/21 07:07	11/07/21 12:29	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		11/03/21 07:07	11/07/21 12:29	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>1.1</b>	<b>J</b>	1.9	0.79	ng/L		11/03/21 07:07	11/07/21 12:29	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/03/21 07:07	11/07/21 12:29	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/03/21 07:07	11/07/21 12:29	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/03/21 07:07	11/07/21 12:29	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		11/03/21 07:07	11/07/21 12:29	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/03/21 07:07	11/07/21 12:29	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		11/03/21 07:07	11/07/21 12:29	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>1.0</b>	<b>J</b>	1.9	0.19	ng/L		11/03/21 07:07	11/07/21 12:29	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>12</b>		1.9	0.53	ng/L		11/03/21 07:07	11/07/21 12:29	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>12</b>		1.9	0.50	ng/L		11/03/21 07:07	11/07/21 12:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		11/03/21 07:07	11/07/21 12:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		11/03/21 07:07	11/07/21 12:29	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		11/03/21 07:07	11/07/21 12:29	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/03/21 07:07	11/07/21 12:29	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/03/21 07:07	11/07/21 12:29	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		11/03/21 07:07	11/07/21 12:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		50 - 150	11/03/21 07:07	11/07/21 12:29	1
13C4 PFHpA	95		50 - 150	11/03/21 07:07	11/07/21 12:29	1
13C4 PFOA	101		50 - 150	11/03/21 07:07	11/07/21 12:29	1
13C5 PFNA	98		50 - 150	11/03/21 07:07	11/07/21 12:29	1
13C2 PFDA	98		50 - 150	11/03/21 07:07	11/07/21 12:29	1
13C2 PFUnA	90		50 - 150	11/03/21 07:07	11/07/21 12:29	1
13C2 PFDoA	88		50 - 150	11/03/21 07:07	11/07/21 12:29	1
13C2 PFTeDA	90		50 - 150	11/03/21 07:07	11/07/21 12:29	1
13C3 PFBS	92		50 - 150	11/03/21 07:07	11/07/21 12:29	1
18O2 PFHxS	83		50 - 150	11/03/21 07:07	11/07/21 12:29	1
13C4 PFOS	91		50 - 150	11/03/21 07:07	11/07/21 12:29	1
d3-NMeFOSAA	97		50 - 150	11/03/21 07:07	11/07/21 12:29	1
d5-NEtFOSAA	95		50 - 150	11/03/21 07:07	11/07/21 12:29	1
13C3 HFPO-DA	84		50 - 150	11/03/21 07:07	11/07/21 12:29	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

**Client Sample ID: MW-1-15**

**Lab Sample ID: 320-81056-10**

**Date Collected: 10/26/21 11:31**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.54	ng/L		11/03/21 07:07	11/07/21 12:39	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/03/21 07:07	11/07/21 12:39	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.79	ng/L		11/03/21 07:07	11/07/21 12:39	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/03/21 07:07	11/07/21 12:39	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		11/03/21 07:07	11/07/21 12:39	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/03/21 07:07	11/07/21 12:39	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		11/03/21 07:07	11/07/21 12:39	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/03/21 07:07	11/07/21 12:39	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		11/03/21 07:07	11/07/21 12:39	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/03/21 07:07	11/07/21 12:39	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.76</b>	<b>J</b>	1.8	0.53	ng/L		11/03/21 07:07	11/07/21 12:39	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		11/03/21 07:07	11/07/21 12:39	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/03/21 07:07	11/07/21 12:39	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/03/21 07:07	11/07/21 12:39	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/03/21 07:07	11/07/21 12:39	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/03/21 07:07	11/07/21 12:39	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.30	ng/L		11/03/21 07:07	11/07/21 12:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		11/03/21 07:07	11/07/21 12:39	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		50 - 150	11/03/21 07:07	11/07/21 12:39	1
13C4 PFHpA	102		50 - 150	11/03/21 07:07	11/07/21 12:39	1
13C4 PFOA	103		50 - 150	11/03/21 07:07	11/07/21 12:39	1
13C5 PFNA	103		50 - 150	11/03/21 07:07	11/07/21 12:39	1
13C2 PFDA	97		50 - 150	11/03/21 07:07	11/07/21 12:39	1
13C2 PFUnA	96		50 - 150	11/03/21 07:07	11/07/21 12:39	1
13C2 PFDoA	96		50 - 150	11/03/21 07:07	11/07/21 12:39	1
13C2 PFTeDA	98		50 - 150	11/03/21 07:07	11/07/21 12:39	1
13C3 PFBS	90		50 - 150	11/03/21 07:07	11/07/21 12:39	1
18O2 PFHxS	92		50 - 150	11/03/21 07:07	11/07/21 12:39	1
13C4 PFOS	102		50 - 150	11/03/21 07:07	11/07/21 12:39	1
d3-NMeFOSAA	103		50 - 150	11/03/21 07:07	11/07/21 12:39	1
d5-NEtFOSAA	99		50 - 150	11/03/21 07:07	11/07/21 12:39	1
13C3 HFPO-DA	90		50 - 150	11/03/21 07:07	11/07/21 12:39	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

**Client Sample ID: MW-1-40**

**Lab Sample ID: 320-81056-11**

**Date Collected: 10/26/21 12:14**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/03/21 07:07	11/07/21 12:49	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/03/21 07:07	11/07/21 12:49	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		11/03/21 07:07	11/07/21 12:49	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/03/21 07:07	11/07/21 12:49	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/03/21 07:07	11/07/21 12:49	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/03/21 07:07	11/07/21 12:49	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/03/21 07:07	11/07/21 12:49	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/03/21 07:07	11/07/21 12:49	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/03/21 07:07	11/07/21 12:49	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/03/21 07:07	11/07/21 12:49	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/03/21 07:07	11/07/21 12:49	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/03/21 07:07	11/07/21 12:49	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/03/21 07:07	11/07/21 12:49	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/03/21 07:07	11/07/21 12:49	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/03/21 07:07	11/07/21 12:49	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/03/21 07:07	11/07/21 12:49	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/03/21 07:07	11/07/21 12:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/03/21 07:07	11/07/21 12:49	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		50 - 150	11/03/21 07:07	11/07/21 12:49	1
13C4 PFHpA	97		50 - 150	11/03/21 07:07	11/07/21 12:49	1
13C4 PFOA	100		50 - 150	11/03/21 07:07	11/07/21 12:49	1
13C5 PFNA	99		50 - 150	11/03/21 07:07	11/07/21 12:49	1
13C2 PFDA	100		50 - 150	11/03/21 07:07	11/07/21 12:49	1
13C2 PFUnA	97		50 - 150	11/03/21 07:07	11/07/21 12:49	1
13C2 PFDoA	98		50 - 150	11/03/21 07:07	11/07/21 12:49	1
13C2 PFTeDA	86		50 - 150	11/03/21 07:07	11/07/21 12:49	1
13C3 PFBS	102		50 - 150	11/03/21 07:07	11/07/21 12:49	1
18O2 PFHxS	83		50 - 150	11/03/21 07:07	11/07/21 12:49	1
13C4 PFOS	89		50 - 150	11/03/21 07:07	11/07/21 12:49	1
d3-NMeFOSAA	96		50 - 150	11/03/21 07:07	11/07/21 12:49	1
d5-NEtFOSAA	99		50 - 150	11/03/21 07:07	11/07/21 12:49	1
13C3 HFPO-DA	87		50 - 150	11/03/21 07:07	11/07/21 12:49	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

**Client Sample ID: MW-2-30**

**Lab Sample ID: 320-81056-12**

**Date Collected: 10/26/21 14:19**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>0.54</b>	<b>J I</b>	1.8	0.53	ng/L		11/03/21 07:07	11/07/21 12:59	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/03/21 07:07	11/07/21 12:59	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		11/03/21 07:07	11/07/21 12:59	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/03/21 07:07	11/07/21 12:59	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/03/21 07:07	11/07/21 12:59	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/03/21 07:07	11/07/21 12:59	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/03/21 07:07	11/07/21 12:59	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/03/21 07:07	11/07/21 12:59	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/03/21 07:07	11/07/21 12:59	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>1.1</b>	<b>J</b>	1.8	0.18	ng/L		11/03/21 07:07	11/07/21 12:59	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/03/21 07:07	11/07/21 12:59	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.51</b>	<b>J</b>	1.8	0.49	ng/L		11/03/21 07:07	11/07/21 12:59	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/03/21 07:07	11/07/21 12:59	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/03/21 07:07	11/07/21 12:59	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/03/21 07:07	11/07/21 12:59	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/03/21 07:07	11/07/21 12:59	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/03/21 07:07	11/07/21 12:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/03/21 07:07	11/07/21 12:59	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	87		50 - 150	11/03/21 07:07	11/07/21 12:59	1
13C4 PFHpA	94		50 - 150	11/03/21 07:07	11/07/21 12:59	1
13C4 PFOA	105		50 - 150	11/03/21 07:07	11/07/21 12:59	1
13C5 PFNA	104		50 - 150	11/03/21 07:07	11/07/21 12:59	1
13C2 PFDA	106		50 - 150	11/03/21 07:07	11/07/21 12:59	1
13C2 PFUnA	99		50 - 150	11/03/21 07:07	11/07/21 12:59	1
13C2 PFDoA	108		50 - 150	11/03/21 07:07	11/07/21 12:59	1
13C2 PFTeDA	106		50 - 150	11/03/21 07:07	11/07/21 12:59	1
13C3 PFBS	96		50 - 150	11/03/21 07:07	11/07/21 12:59	1
18O2 PFHxS	101		50 - 150	11/03/21 07:07	11/07/21 12:59	1
13C4 PFOS	99		50 - 150	11/03/21 07:07	11/07/21 12:59	1
d3-NMeFOSAA	100		50 - 150	11/03/21 07:07	11/07/21 12:59	1
d5-NEtFOSAA	105		50 - 150	11/03/21 07:07	11/07/21 12:59	1
13C3 HFPO-DA	84		50 - 150	11/03/21 07:07	11/07/21 12:59	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

**Client Sample ID: MW-2-20**

**Lab Sample ID: 320-81056-13**

Date Collected: 10/26/21 14:42

Matrix: Water

Date Received: 10/29/21 15:04

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	93		1.8	0.53	ng/L		11/03/21 07:07	11/07/21 13:09	1
Perfluoroheptanoic acid (PFHpA)	49		1.8	0.23	ng/L		11/03/21 07:07	11/07/21 13:09	1
Perfluorooctanoic acid (PFOA)	24		1.8	0.77	ng/L		11/03/21 07:07	11/07/21 13:09	1
Perfluorononanoic acid (PFNA)	7.0		1.8	0.24	ng/L		11/03/21 07:07	11/07/21 13:09	1
Perfluorodecanoic acid (PFDA)	0.72	J	1.8	0.28	ng/L		11/03/21 07:07	11/07/21 13:09	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/03/21 07:07	11/07/21 13:09	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/03/21 07:07	11/07/21 13:09	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/03/21 07:07	11/07/21 13:09	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/03/21 07:07	11/07/21 13:09	1
Perfluorobutanesulfonic acid (PFBS)	2.6		1.8	0.18	ng/L		11/03/21 07:07	11/07/21 13:09	1
Perfluorohexanesulfonic acid (PFHxS)	40		1.8	0.52	ng/L		11/03/21 07:07	11/07/21 13:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/03/21 07:07	11/07/21 13:09	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/03/21 07:07	11/07/21 13:09	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/03/21 07:07	11/07/21 13:09	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/03/21 07:07	11/07/21 13:09	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/03/21 07:07	11/07/21 13:09	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/03/21 07:07	11/07/21 13:09	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	85		50 - 150	11/03/21 07:07	11/07/21 13:09	1
13C4 PFHpA	88		50 - 150	11/03/21 07:07	11/07/21 13:09	1
13C4 PFOA	96		50 - 150	11/03/21 07:07	11/07/21 13:09	1
13C5 PFNA	95		50 - 150	11/03/21 07:07	11/07/21 13:09	1
13C2 PFDA	96		50 - 150	11/03/21 07:07	11/07/21 13:09	1
13C2 PFUnA	97		50 - 150	11/03/21 07:07	11/07/21 13:09	1
13C2 PFDoA	102		50 - 150	11/03/21 07:07	11/07/21 13:09	1
13C2 PFTeDA	101		50 - 150	11/03/21 07:07	11/07/21 13:09	1
13C3 PFBS	90		50 - 150	11/03/21 07:07	11/07/21 13:09	1
18O2 PFHxS	85		50 - 150	11/03/21 07:07	11/07/21 13:09	1
13C4 PFOS	93		50 - 150	11/03/21 07:07	11/07/21 13:09	1
d3-NMeFOSAA	95		50 - 150	11/03/21 07:07	11/07/21 13:09	1
d5-NEtFOSAA	101		50 - 150	11/03/21 07:07	11/07/21 13:09	1
13C3 HFPO-DA	75		50 - 150	11/03/21 07:07	11/07/21 13:09	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	360		9.1	2.4	ng/L		11/03/21 07:07	11/09/21 05:31	5

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	91		50 - 150	11/03/21 07:07	11/09/21 05:31	5



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

**Client Sample ID: MW-102-20**

**Lab Sample ID: 320-81056-14**

Date Collected: 10/26/21 14:32

Matrix: Water

Date Received: 10/29/21 15:04

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	90		1.8	0.52	ng/L		11/03/21 07:07	11/07/21 13:20	1
Perfluoroheptanoic acid (PFHpA)	44		1.8	0.22	ng/L		11/03/21 07:07	11/07/21 13:20	1
Perfluorooctanoic acid (PFOA)	24		1.8	0.76	ng/L		11/03/21 07:07	11/07/21 13:20	1
Perfluorononanoic acid (PFNA)	6.5		1.8	0.24	ng/L		11/03/21 07:07	11/07/21 13:20	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/03/21 07:07	11/07/21 13:20	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		11/03/21 07:07	11/07/21 13:20	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		11/03/21 07:07	11/07/21 13:20	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/03/21 07:07	11/07/21 13:20	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/03/21 07:07	11/07/21 13:20	1
Perfluorobutanesulfonic acid (PFBS)	2.7		1.8	0.18	ng/L		11/03/21 07:07	11/07/21 13:20	1
Perfluorohexanesulfonic acid (PFHxS)	39		1.8	0.51	ng/L		11/03/21 07:07	11/07/21 13:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/03/21 07:07	11/07/21 13:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/03/21 07:07	11/07/21 13:20	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/03/21 07:07	11/07/21 13:20	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		11/03/21 07:07	11/07/21 13:20	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/03/21 07:07	11/07/21 13:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/03/21 07:07	11/07/21 13:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		50 - 150	11/03/21 07:07	11/07/21 13:20	1
13C4 PFHpA	88		50 - 150	11/03/21 07:07	11/07/21 13:20	1
13C4 PFOA	93		50 - 150	11/03/21 07:07	11/07/21 13:20	1
13C5 PFNA	93		50 - 150	11/03/21 07:07	11/07/21 13:20	1
13C2 PFDA	97		50 - 150	11/03/21 07:07	11/07/21 13:20	1
13C2 PFUnA	96		50 - 150	11/03/21 07:07	11/07/21 13:20	1
13C2 PFDoA	97		50 - 150	11/03/21 07:07	11/07/21 13:20	1
13C2 PFTeDA	98		50 - 150	11/03/21 07:07	11/07/21 13:20	1
13C3 PFBS	90		50 - 150	11/03/21 07:07	11/07/21 13:20	1
18O2 PFHxS	85		50 - 150	11/03/21 07:07	11/07/21 13:20	1
13C4 PFOS	92		50 - 150	11/03/21 07:07	11/07/21 13:20	1
d3-NMeFOSAA	92		50 - 150	11/03/21 07:07	11/07/21 13:20	1
d5-NEtFOSAA	91		50 - 150	11/03/21 07:07	11/07/21 13:20	1
13C3 HFPO-DA	82		50 - 150	11/03/21 07:07	11/07/21 13:20	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	330		9.0	2.4	ng/L		11/03/21 07:07	11/09/21 05:41	5

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	85		50 - 150	11/03/21 07:07	11/09/21 05:41	5

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

**Client Sample ID: MW-6-20**

**Lab Sample ID: 320-81056-15**

**Date Collected: 10/26/21 15:54**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/03/21 07:07	11/07/21 13:30	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/03/21 07:07	11/07/21 13:30	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		11/03/21 07:07	11/07/21 13:30	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/03/21 07:07	11/07/21 13:30	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/03/21 07:07	11/07/21 13:30	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/03/21 07:07	11/07/21 13:30	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/03/21 07:07	11/07/21 13:30	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/03/21 07:07	11/07/21 13:30	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		11/03/21 07:07	11/07/21 13:30	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/03/21 07:07	11/07/21 13:30	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>1.1</b>	<b>J</b>	1.8	0.52	ng/L		11/03/21 07:07	11/07/21 13:30	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		11/03/21 07:07	11/07/21 13:30	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/03/21 07:07	11/07/21 13:30	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/03/21 07:07	11/07/21 13:30	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/03/21 07:07	11/07/21 13:30	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/03/21 07:07	11/07/21 13:30	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/03/21 07:07	11/07/21 13:30	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		11/03/21 07:07	11/07/21 13:30	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	84		50 - 150	11/03/21 07:07	11/07/21 13:30	1
13C4 PFHpA	93		50 - 150	11/03/21 07:07	11/07/21 13:30	1
13C4 PFOA	94		50 - 150	11/03/21 07:07	11/07/21 13:30	1
13C5 PFNA	95		50 - 150	11/03/21 07:07	11/07/21 13:30	1
13C2 PFDA	98		50 - 150	11/03/21 07:07	11/07/21 13:30	1
13C2 PFUnA	88		50 - 150	11/03/21 07:07	11/07/21 13:30	1
13C2 PFDoA	98		50 - 150	11/03/21 07:07	11/07/21 13:30	1
13C2 PFTeDA	94		50 - 150	11/03/21 07:07	11/07/21 13:30	1
13C3 PFBS	93		50 - 150	11/03/21 07:07	11/07/21 13:30	1
18O2 PFHxS	87		50 - 150	11/03/21 07:07	11/07/21 13:30	1
13C4 PFOS	91		50 - 150	11/03/21 07:07	11/07/21 13:30	1
d3-NMeFOSAA	94		50 - 150	11/03/21 07:07	11/07/21 13:30	1
d5-NEtFOSAA	93		50 - 150	11/03/21 07:07	11/07/21 13:30	1
13C3 HFPO-DA	78		50 - 150	11/03/21 07:07	11/07/21 13:30	1

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: Q4 GST MWs

Job ID: 320-81056-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDaA (50-150)	PFTDA (50-150)
320-81056-1	MW-10-20	85	90	99	93	90	93	95	90
320-81056-2	MW-9-30	85	89	99	94	93	91	95	88
320-81056-3	MW-109-30	81	91	98	94	95	89	94	87
320-81056-4	MW-7-20	89	98	100	98	91	91	97	96
320-81056-5	MW-8-20	88	96	100	98	94	96	96	103
320-81056-6	MW-4-20	91	90	103	101	91	98	98	95
320-81056-7	MW-5-20	85	95	105	98	93	98	100	98
320-81056-8	MW-3-15	93	99	101	103	101	100	105	104
320-81056-9	MW-3-40	86	95	101	98	98	90	88	90
320-81056-10	MW-1-15	86	102	103	103	97	96	96	98
320-81056-11	MW-1-40	92	97	100	99	100	97	98	86
320-81056-12	MW-2-30	87	94	105	104	106	99	108	106
320-81056-13	MW-2-20	85	88	96	95	96	97	102	101
320-81056-13 - DL	MW-2-20								
320-81056-14	MW-102-20	86	88	93	93	97	96	97	98
320-81056-14 - DL	MW-102-20								
320-81056-15	MW-6-20	84	93	94	95	98	88	98	94
LCS 320-539428/2-A	Lab Control Sample	94	100	102	100	106	106	108	105
LCSD 320-539428/3-A	Lab Control Sample Dup	94	97	100	97	102	101	107	105
MB 320-539428/1-A	Method Blank	94	91	103	96	99	92	96	90

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-81056-1	MW-10-20	90	83	89	99	96	81
320-81056-2	MW-9-30	87	83	90	98	92	80
320-81056-3	MW-109-30	85	83	87	95	97	79
320-81056-4	MW-7-20	89	89	95	95	92	90
320-81056-5	MW-8-20	98	92	99	97	105	90
320-81056-6	MW-4-20	91	92	91	100	98	86
320-81056-7	MW-5-20	101	91	98	92	96	82
320-81056-8	MW-3-15	98	94	104	106	106	84
320-81056-9	MW-3-40	92	83	91	97	95	84
320-81056-10	MW-1-15	90	92	102	103	99	90
320-81056-11	MW-1-40	102	83	89	96	99	87
320-81056-12	MW-2-30	96	101	99	100	105	84
320-81056-13	MW-2-20	90	85	93	95	101	75
320-81056-13 - DL	MW-2-20			91			
320-81056-14	MW-102-20	90	85	92	92	91	82
320-81056-14 - DL	MW-102-20			85			
320-81056-15	MW-6-20	93	87	91	94	93	78
LCS 320-539428/2-A	Lab Control Sample	109	99	108	111	110	89
LCSD 320-539428/3-A	Lab Control Sample Dup	102	97	108	116	108	86
MB 320-539428/1-A	Method Blank	94	86	100	96	101	83

**Surrogate Legend**

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

PFUnA = 13C2 PFUnA  
PFDoA = 13C2 PFDoA  
PFTDA = 13C2 PFTeDA  
C3PFBS = 13C3 PFBS  
PFHxS = 18O2 PFHxS  
PFOS = 13C4 PFOS  
d3NMFOS = d3-NMeFOSAA  
d5NEFOS = d5-NEtFOSAA  
HFPODA = 13C3 HFPO-DA

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-539428/ 1-A**  
**Matrix: Water**  
**Analysis Batch: 540699**

**Client Sample ID: Method Blank**  
**Prep Type: Total/ NA**  
**Prep Batch: 539428**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		11/03/21 07:07	11/07/21 10:17	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/03/21 07:07	11/07/21 10:17	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		11/03/21 07:07	11/07/21 10:17	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/03/21 07:07	11/07/21 10:17	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/03/21 07:07	11/07/21 10:17	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/03/21 07:07	11/07/21 10:17	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/03/21 07:07	11/07/21 10:17	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/03/21 07:07	11/07/21 10:17	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		11/03/21 07:07	11/07/21 10:17	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/03/21 07:07	11/07/21 10:17	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		11/03/21 07:07	11/07/21 10:17	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		11/03/21 07:07	11/07/21 10:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		11/03/21 07:07	11/07/21 10:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/03/21 07:07	11/07/21 10:17	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/03/21 07:07	11/07/21 10:17	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/03/21 07:07	11/07/21 10:17	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/03/21 07:07	11/07/21 10:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/03/21 07:07	11/07/21 10:17	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		50 - 150	11/03/21 07:07	11/07/21 10:17	1
13C4 PFHpA	91		50 - 150	11/03/21 07:07	11/07/21 10:17	1
13C4 PFOA	103		50 - 150	11/03/21 07:07	11/07/21 10:17	1
13C5 PFNA	96		50 - 150	11/03/21 07:07	11/07/21 10:17	1
13C2 PFDA	99		50 - 150	11/03/21 07:07	11/07/21 10:17	1
13C2 PFUnA	92		50 - 150	11/03/21 07:07	11/07/21 10:17	1
13C2 PFDoA	96		50 - 150	11/03/21 07:07	11/07/21 10:17	1
13C2 PFTeDA	90		50 - 150	11/03/21 07:07	11/07/21 10:17	1
13C3 PFBS	94		50 - 150	11/03/21 07:07	11/07/21 10:17	1
18O2 PFHxS	86		50 - 150	11/03/21 07:07	11/07/21 10:17	1
13C4 PFOS	100		50 - 150	11/03/21 07:07	11/07/21 10:17	1
d3-NMeFOSAA	96		50 - 150	11/03/21 07:07	11/07/21 10:17	1
d5-NEtFOSAA	101		50 - 150	11/03/21 07:07	11/07/21 10:17	1
13C3 HFPO-DA	83		50 - 150	11/03/21 07:07	11/07/21 10:17	1

**Lab Sample ID: LCS 320-539428/2-A**  
**Matrix: Water**  
**Analysis Batch: 540699**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/ NA**  
**Prep Batch: 539428**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	40.0	38.8		ng/L		97	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	38.6		ng/L		96	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	36.7		ng/L		92	71 - 133
Perfluorononanoic acid (PFNA)	40.0	40.6		ng/L		102	69 - 130

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-539428/2-A**  
**Matrix: Water**  
**Analysis Batch: 540699**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/ NA**  
**Prep Batch: 539428**

Analyte	Spike Added	LCS Result	LCS Qualifier	U nit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	37.3		ng/L		93	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	36.1		ng/L		90	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	38.5		ng/L		96	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	38.8		ng/L		97	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	39.1		ng/L		98	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	29.7		ng/L		84	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.4		ng/L		89	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	32.7		ng/L		88	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	35.7		ng/L		89	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	37.4		ng/L		93	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	33.7		ng/L		90	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.7		ng/L		99	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	35.3		ng/L		94	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	34.4		ng/L		91	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	94		50 - 150
13C4 PFHpA	100		50 - 150
13C4 PFOA	102		50 - 150
13C5 PFNA	100		50 - 150
13C2 PFDA	106		50 - 150
13C2 PFUnA	106		50 - 150
13C2 PFDoA	108		50 - 150
13C2 PFTeDA	105		50 - 150
13C3 PFBS	109		50 - 150
18O2 PFHxS	99		50 - 150
13C4 PFOS	108		50 - 150
d3-NMeFOSAA	111		50 - 150
d5-NEtFOSAA	110		50 - 150
13C3 HFPO-DA	89		50 - 150

**Lab Sample ID: LCSD 320-539428/3-A**  
**Matrix: Water**  
**Analysis Batch: 540699**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/ NA**  
**Prep Batch: 539428**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	U nit	D	%Rec	%Rec. RPD	
							Limits	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	38.1		ng/L		95	72 - 129	2 30
Perfluoroheptanoic acid (PFHpA)	40.0	37.3		ng/L		93	72 - 130	3 30
Perfluorooctanoic acid (PFOA)	40.0	38.8		ng/L		97	71 - 133	6 30

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-539428/3-A**  
**Matrix: Water**  
**Analysis Batch: 540699**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/ NA**  
**Prep Batch: 539428**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	40.2		ng/L		101	69 - 130	1	30
Perfluorodecanoic acid (PFDA)	40.0	39.3		ng/L		98	71 - 129	5	30
Perfluoroundecanoic acid (PFUnA)	40.0	40.6		ng/L		102	69 - 133	12	30
Perfluorododecanoic acid (PFDoA)	40.0	39.1		ng/L		98	72 - 134	2	30
Perfluorotridecanoic acid (PFTriA)	40.0	40.0		ng/L		100	65 - 144	3	30
Perfluorotetradecanoic acid (PFTeA)	40.0	36.1		ng/L		90	71 - 132	8	30
Perfluorobutanesulfonic acid (PFBS)	35.4	29.5		ng/L		83	72 - 130	1	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.9		ng/L		90	68 - 131	1	30
Perfluorooctanesulfonic acid (PFOS)	37.1	32.1		ng/L		87	65 - 140	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	33.2		ng/L		83	65 - 136	7	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	34.8		ng/L		87	61 - 135	7	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	31.7		ng/L		85	77 - 137	6	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.3		ng/L		103	72 - 132	4	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	33.7		ng/L		89	76 - 136	5	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	33.1		ng/L		88	81 - 141	4	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	94		50 - 150
13C4 PFHpA	97		50 - 150
13C4 PFOA	100		50 - 150
13C5 PFNA	97		50 - 150
13C2 PFDA	102		50 - 150
13C2 PFUnA	101		50 - 150
13C2 PFDoA	107		50 - 150
13C2 PFTeDA	105		50 - 150
13C3 PFBS	102		50 - 150
18O2 PFHxS	97		50 - 150
13C4 PFOS	108		50 - 150
d3-NMeFOSAA	116		50 - 150
d5-NEtFOSAA	108		50 - 150
13C3 HFPO-DA	86		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

## LCMS

### Prep Batch: 539428

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-81056-1	MW-10-20	Total/NA	Water	3535	
320-81056-2	MW-9-30	Total/NA	Water	3535	
320-81056-3	MW-109-30	Total/NA	Water	3535	
320-81056-4	MW-7-20	Total/NA	Water	3535	
320-81056-5	MW-8-20	Total/NA	Water	3535	
320-81056-6	MW-4-20	Total/NA	Water	3535	
320-81056-7	MW-5-20	Total/NA	Water	3535	
320-81056-8	MW-3-15	Total/NA	Water	3535	
320-81056-9	MW-3-40	Total/NA	Water	3535	
320-81056-10	MW-1-15	Total/NA	Water	3535	
320-81056-11	MW-1-40	Total/NA	Water	3535	
320-81056-12	MW-2-30	Total/NA	Water	3535	
320-81056-13 - DL	MW-2-20	Total/NA	Water	3535	
320-81056-13	MW-2-20	Total/NA	Water	3535	
320-81056-14 - DL	MW-102-20	Total/NA	Water	3535	
320-81056-14	MW-102-20	Total/NA	Water	3535	
320-81056-15	MW-6-20	Total/NA	Water	3535	
MB 320-539428/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-539428/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-539428/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 540699

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-81056-1	MW-10-20	Total/NA	Water	EPA 537(Mod)	539428
320-81056-2	MW-9-30	Total/NA	Water	EPA 537(Mod)	539428
320-81056-3	MW-109-30	Total/NA	Water	EPA 537(Mod)	539428
320-81056-4	MW-7-20	Total/NA	Water	EPA 537(Mod)	539428
320-81056-5	MW-8-20	Total/NA	Water	EPA 537(Mod)	539428
320-81056-6	MW-4-20	Total/NA	Water	EPA 537(Mod)	539428
320-81056-7	MW-5-20	Total/NA	Water	EPA 537(Mod)	539428
320-81056-8	MW-3-15	Total/NA	Water	EPA 537(Mod)	539428
320-81056-9	MW-3-40	Total/NA	Water	EPA 537(Mod)	539428
320-81056-10	MW-1-15	Total/NA	Water	EPA 537(Mod)	539428
320-81056-11	MW-1-40	Total/NA	Water	EPA 537(Mod)	539428
320-81056-12	MW-2-30	Total/NA	Water	EPA 537(Mod)	539428
320-81056-13	MW-2-20	Total/NA	Water	EPA 537(Mod)	539428
320-81056-14	MW-102-20	Total/NA	Water	EPA 537(Mod)	539428
320-81056-15	MW-6-20	Total/NA	Water	EPA 537(Mod)	539428
MB 320-539428/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	539428
LCS 320-539428/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	539428
LCSD 320-539428/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	539428

### Analysis Batch: 541070

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-81056-13 - DL	MW-2-20	Total/NA	Water	EPA 537(Mod)	539428
320-81056-14 - DL	MW-102-20	Total/NA	Water	EPA 537(Mod)	539428



# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

## Client Sample ID: MW-10-20

Date Collected: 10/25/21 12:27

Date Received: 10/29/21 15:04

## Lab Sample ID: 320-81056-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			278.5 mL	10.0 mL	539428	11/03/21 07:07	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			540699	11/07/21 10:48	K1S	TAL SAC

## Client Sample ID: MW-9-30

Date Collected: 10/25/21 13:56

Date Received: 10/29/21 15:04

## Lab Sample ID: 320-81056-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			273 mL	10.0 mL	539428	11/03/21 07:07	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			540699	11/07/21 10:58	K1S	TAL SAC

## Client Sample ID: MW-109-30

Date Collected: 10/25/21 13:46

Date Received: 10/29/21 15:04

## Lab Sample ID: 320-81056-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268.4 mL	10.0 mL	539428	11/03/21 07:07	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			540699	11/07/21 11:08	K1S	TAL SAC

## Client Sample ID: MW-7-20

Date Collected: 10/25/21 15:00

Date Received: 10/29/21 15:04

## Lab Sample ID: 320-81056-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.7 mL	10.0 mL	539428	11/03/21 07:07	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			540699	11/07/21 11:18	K1S	TAL SAC

## Client Sample ID: MW-8-20

Date Collected: 10/25/21 11:00

Date Received: 10/29/21 15:04

## Lab Sample ID: 320-81056-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.6 mL	10.0 mL	539428	11/03/21 07:07	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			540699	11/07/21 11:28	K1S	TAL SAC

## Client Sample ID: MW-4-20

Date Collected: 10/25/21 16:22

Date Received: 10/29/21 15:04

## Lab Sample ID: 320-81056-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			278.3 mL	10.0 mL	539428	11/03/21 07:07	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			540699	11/07/21 11:38	K1S	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

**Client Sample ID: MW-5-20**

**Lab Sample ID: 320-81056-7**

Date Collected: 10/25/21 17:19

Matrix: Water

Date Received: 10/29/21 15:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			273.3 mL	10.0 mL	539428	11/03/21 07:07	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			540699	11/07/21 11:48	K1S	TAL SAC

**Client Sample ID: MW-3-15**

**Lab Sample ID: 320-81056-8**

Date Collected: 10/26/21 09:41

Matrix: Water

Date Received: 10/29/21 15:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270 mL	10.0 mL	539428	11/03/21 07:07	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			540699	11/07/21 12:19	K1S	TAL SAC

**Client Sample ID: MW-3-40**

**Lab Sample ID: 320-81056-9**

Date Collected: 10/26/21 10:38

Matrix: Water

Date Received: 10/29/21 15:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268.7 mL	10.0 mL	539428	11/03/21 07:07	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			540699	11/07/21 12:29	K1S	TAL SAC

**Client Sample ID: MW-1-15**

**Lab Sample ID: 320-81056-10**

Date Collected: 10/26/21 11:31

Matrix: Water

Date Received: 10/29/21 15:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.5 mL	10.0 mL	539428	11/03/21 07:07	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			540699	11/07/21 12:39	K1S	TAL SAC

**Client Sample ID: MW-1-40**

**Lab Sample ID: 320-81056-11**

Date Collected: 10/26/21 12:14

Matrix: Water

Date Received: 10/29/21 15:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.1 mL	10.0 mL	539428	11/03/21 07:07	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			540699	11/07/21 12:49	K1S	TAL SAC

**Client Sample ID: MW-2-30**

**Lab Sample ID: 320-81056-12**

Date Collected: 10/26/21 14:19

Matrix: Water

Date Received: 10/29/21 15:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274.8 mL	10.0 mL	539428	11/03/21 07:07	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			540699	11/07/21 12:59	K1S	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
 Project/Site: Q4 GST MWs

Job ID: 320-81056-1

**Client Sample ID: MW-2-20**

**Lab Sample ID: 320-81056-13**

**Date Collected: 10/26/21 14:42**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			275.7 mL	10.0 mL	539428	11/03/21 07:07	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			540699	11/07/21 13:09	K1S	TAL SAC
Total/NA	Prep	3535	DL		275.7 mL	10.0 mL	539428	11/03/21 07:07	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	5			541070	11/09/21 05:31	MNV	TAL SAC

**Client Sample ID: MW-102-20**

**Lab Sample ID: 320-81056-14**

**Date Collected: 10/26/21 14:32**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			278.6 mL	10.0 mL	539428	11/03/21 07:07	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			540699	11/07/21 13:20	K1S	TAL SAC
Total/NA	Prep	3535	DL		278.6 mL	10.0 mL	539428	11/03/21 07:07	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	5			541070	11/09/21 05:41	MNV	TAL SAC

**Client Sample ID: MW-6-20**

**Lab Sample ID: 320-81056-15**

**Date Collected: 10/26/21 15:54**

**Matrix: Water**

**Date Received: 10/29/21 15:04**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			272.4 mL	10.0 mL	539428	11/03/21 07:07	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			540699	11/07/21 13:30	K1S	TAL SAC

**Laboratory References:**

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

## Laboratory: Eurofins TestAmerica, Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

- 1
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# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	TAL SAC TAL SAC

#### Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 GST MWs

Job ID: 320-81056-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-81056-1	MW-10-20	Water	10/25/21 12:27	10/29/21 15:04
320-81056-2	MW-9-30	Water	10/25/21 13:56	10/29/21 15:04
320-81056-3	MW-109-30	Water	10/25/21 13:46	10/29/21 15:04
320-81056-4	MW-7-20	Water	10/25/21 15:00	10/29/21 15:04
320-81056-5	MW-8-20	Water	10/25/21 11:00	10/29/21 15:04
320-81056-6	MW-4-20	Water	10/25/21 16:22	10/29/21 15:04
320-81056-7	MW-5-20	Water	10/25/21 17:19	10/29/21 15:04
320-81056-8	MW-3-15	Water	10/26/21 09:41	10/29/21 15:04
320-81056-9	MW-3-40	Water	10/26/21 10:38	10/29/21 15:04
320-81056-10	MW-1-15	Water	10/26/21 11:31	10/29/21 15:04
320-81056-11	MW-1-40	Water	10/26/21 12:14	10/29/21 15:04
320-81056-12	MW-2-30	Water	10/26/21 14:19	10/29/21 15:04
320-81056-13	MW-2-20	Water	10/26/21 14:42	10/29/21 15:04
320-81056-14	MW-102-20	Water	10/26/21 14:32	10/29/21 15:04
320-81056-15	MW-6-20	Water	10/26/21 15:54	10/29/21 15:04

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# CHAIN-OF-CUSTODY RECORD

Page 1 of 2  
 Laboratory **David Atterberg**  
 Affn: **Test America**

Analytical Methods (include preservative if used)

Turn Around Time:  
 Normal  Rush  
 Please Specify

Quote No:  
 J-Flags:  Yes  No

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-10-20		1227	10/25/21	2	Groundwater
MW-9-30		1356	10/25/21	2	Groundwater
<del>MW-19-30</del>		<del>1316</del>			
MW-109-30		1346	10/25/21	2	Groundwater
MW-7-20		1500		2	Groundwater
MW-8-20		1100		2	Groundwater
MW-4-20		1622		2	Groundwater
MW-5-20		1719		2	Groundwater
MW-3-15		0941	10/26/21	2	
MW-3-40		1038		2	



Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Number: 102599-019 Name: QH GST MWs Contact: Krista Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Sampler: MSC	Total No. of Containers: 30 COC Seals/Intact? Y/N/NA Received Good Cond./Cold Temp: Delivery Method: galestreek	Signature: [Signature] Printed Name: Veselina Yulcomova Company: Shannon & Wilson	Signature: [Signature] Printed Name: [Signature] Company: [Signature]	Signature: [Signature] Printed Name: [Signature] Company: [Signature]
Notes:		Received By: 1. Signature: [Signature] Printed Name: Shannon & Wilson Company: Shannon & Wilson	Received By: 2. Signature: [Signature] Printed Name: [Signature] Company: [Signature]	Received By: 3. Signature: [Signature] Printed Name: [Signature] Company: [Signature]

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file



# CHAIN-OF-CUSTODY RECORD

Analytical Methods (include preservative if used)

Turn Around Time:  
 Normal  Rush  
 Please Specify

Quote No:  
 MSA Number:  
 J-Flags:  Yes  No

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-1-15		1131	10/26/21	2	Grandwater ↓
MW-1-40		1214		2	
MW-2-30		1419		2	
MW-2-20		1442		2	
MW-102-20		1432		2	
MW-6-20		1554		2	

**Project Information**  
 Number: 102599-019  
 Name: GH GST MWS  
 Contact: Kristen  
 Ongoing Project? Yes  No   
 Sampler: MSC

**Sample Receipt**  
 Total No. of Containers: 30  
 COC Seals/Intact? Y/N/NA  
 Received Good Cond./Cold  
 Temp:  
 Delivery Method: goldstreak

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: <u>[Signature]</u> Printed Name: <u>Vesegna Jakimova</u> Company: <u>Shannon &amp; Wilson</u> Time: <u>10:00</u> Date: <u>10/26/21</u>	Signature: _____ Printed Name: _____ Company: _____ Time: _____ Date: _____	Signature: _____ Printed Name: _____ Company: _____ Time: _____ Date: _____
Received By: 1. Signature: <u>[Signature]</u> Printed Name: <u>Salen</u> Company: <u>ES&amp;S</u> Time: <u>10:14</u> Date: <u>10/26/21</u>	Received By: 2. Signature: _____ Printed Name: _____ Company: _____ Time: _____ Date: _____	Received By: 3. Signature: _____ Printed Name: _____ Company: _____ Time: _____ Date: _____

**Notes:**

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file



## Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-81056-1

**Login Number: 81056**

**List Number: 1**

**Creator: Cahill, Nicholas P**

**List Source: Eurofins TestAmerica, Sacramento**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	Seals
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Laboratory Data Review Checklist

Completed By:

Justin Risley

Title:

Engineering Staff

Date:

November 16, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-81056-1

Laboratory Report Date:

11/10/2021

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

Laboratory Report Date:

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

Analyses were performed by the Eurofins Laboratory in West Sacramento, CA. The laboratory is approved by the DEC CS program and certified under the Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP) for the requested analyses.

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

The samples were not transferred to a network laboratory or subcontracted out.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

Samples do not require preservation other than temperature.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form notes that the samples arrived in good condition.

Laboratory Report Date:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes  No  N/A  Comments:

The sample receipt form indicates that the sampler was not listed on the COC. This note is inaccurate as the field sampler's initials are present and legible on the COC.

- e. Data quality or usability affected?

Comments:

The data quality/usability is not affected.

#### 4. Case Narrative

- a. Present and understandable?

Yes  No  N/A  Comments:

- b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte.

Method EPA 537(Mod): Results for samples *MW-2-20* and *MW-102-20* were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-539428.

Method 3535: The following samples contained a thin layer of sediment at the bottom of the bottle prior to extraction: *MW-10-20*, *MW-9-30*, *MW-109-30*, *MW-7-20*, *MW-8-20*, *MW-4-20*, *MW-5-20*, *MW-3-15*, *MW-3-40*, *MW-1-15*, *MW-1-40*, and *MW-2-30*.

Method 3535: The following samples were slightly yellow prior to extraction: *MW-10-20*, *MW-9-30*, *MW-109-30*, *MW-7-20*, *MW-8-20*, *MW-4-20*, *MW-3-15*, *MW-3-40*, *MW-1-40*, and *MW-2-30*.

Laboratory Report Date:

c. Were all corrective actions documented?

Yes  No  N/A  Comments:

Samples *MW-2-20* and *MW-102-20* were diluted due to the concentrations of target analytes exceeding the instrument's calibration range. The laboratory corrected the internal standard counts with the dilution factors.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The laboratory applied the 'I' qualifier to results affected by transition mass ratio failures. The case narrative notes that these results may have some high bias.

## 5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

The reporting limits (RLs) are less than the applicable DEC regulatory limits for the reported PFAS.

e. Data quality or usability affected?

The data quality/usability is not affected.

## 6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Laboratory Report Date:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; target PFAS were not detected in the method blank sample.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

The samples were not affected by laboratory contamination; see above.

v. Data quality or usability affected?

Comments:

The data quality/usability is not affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A  Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals/Inorganics analyses were not requested for this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

Laboratory Report Date:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; method accuracy and precision were demonstrated to be within acceptable limits.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

Qualification was not required; see above.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality/usability is not affected.

- c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

- i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

MS/MSD samples were not analyzed with this work order; however, the laboratory analyzed LCS and LCSD samples to assess method accuracy and precision.

- ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals/Inorganics analyses were not requested for this work order.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; MS and MSD samples were not analyzed for this work order.

Laboratory Report Date:

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality/usability is not affected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes  No  N/A  Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A  Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

There were no IDA recovery failures for the reported results.

iv. Data quality or usability affected?

Comments:

The data quality/usability is not affected.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes  No  N/A  Comments:

PFAS are not volatile compounds. A trip blank is not required for the requested analysis.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.



Laboratory Report Date:

iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; a trip blank is not required for the requested analysis.

v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

ii. Submitted blind to lab?

Yes  No  N/A  Comments:The field duplicate pairs *MW-9-30 / MW-109-30* and *MW-2-20 / MW-102-20* were submitted with this work order.iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration $R_2$  = Field Duplicate ConcentrationYes  No  N/A  Comments:

The relative precision demonstrated between the detected results of the field duplicate samples was within the recommended DQO of 30%, where calculable, for all analytes.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality/usability is not affected.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

Reusable equipment was not used in the sampling procedure; therefore, an equipment blank is not required.

Laboratory Report Date:

i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

iii. Data quality or usability affected?

Comments:

The data quality/usability is not affected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A  Comments:

The perfluorobutanesulfonic acid (PFBS) result of sample *MW-3-15* and the perfluorohexanoic acid (PFHxA) result of sample *MW-2-30* were affected by transition mass ratio failures and were manually quantified. We consider these results estimated and have applied the 'J' qualifier.

## ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

Laboratory Job ID: 320-81259-1  
Client Project/Site: Q4 DOT MWs

**For:**

Shannon & Wilson, Inc  
2355 Hill Rd.  
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger



---

Authorized for release by:  
11/15/2021 1:17:28 PM

David Alltucker, Project Manager I  
(916)374-4383  
[David.Alltucker@Eurofinset.com](mailto:David.Alltucker@Eurofinset.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:

[www.eurofinsus.com/Env](http://www.eurofinsus.com/Env)

*The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 DOT MWs

Job ID: 320-81259-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: Q4 DOT MWs

Job ID: 320-81259-1

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## Job ID: 320-81259-1

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### Laboratory: Eurofins TestAmerica, Sacramento

#### Narrative

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#### Job Narrative 320-81259-1

#### Receipt

The samples were received on 11/3/2021 2:01 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.5° C.

#### Receipt Exceptions

COC was not relinquished by sender. MW-12-10 (320-81259-1), MW-112-10 (320-81259-2) and MW-11-15 (320-81259-3)

#### LCMS

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte.

Method EPA 537(Mod): Results for samples MW-11-15 (320-81259-3) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-541439.

Method 3535: The following sample is yellow and contain a thin layer of sediment at the bottom of the bottle prior to extraction: MW-11-15 (320-81259-3).

Method 3535: The following samples are yellow and contain floating particulates at the bottom of the bottle prior to extraction: MW-12-10 (320-81259-1) and MW-112-10 (320-81259-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 DOT MWs

Job ID: 320-81259-1

## Client Sample ID: MW-12-10

## Lab Sample ID: 320-81259-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.4		1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.4		1.7	0.21	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.6		1.7	0.72	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.58	J	1.7	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.35	J I	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	10		1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	27		1.7	0.46	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-112-10

## Lab Sample ID: 320-81259-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.9		1.7	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.3		1.7	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.5		1.7	0.74	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.91	J	1.7	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.23	J	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	11		1.7	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	30		1.7	0.47	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-11-15

## Lab Sample ID: 320-81259-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	16		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	10		1.8	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	9.8		1.8	0.76	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	1.3	J	1.8	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorododecanoic acid (PFDoA)	0.72	J	1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	4.7		1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	60		1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	820		18	4.9	ng/L	10		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 DOT MWs

Job ID: 320-81259-1

**Client Sample ID: MW-12-10**

**Lab Sample ID: 320-81259-1**

Date Collected: 10/31/21 11:11

Matrix: Water

Date Received: 11/03/21 14:01

**Method: EPA 537(Mod) - PFAS for QSM 5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perf luorohexanoic acid (PFHxA)	2.4		1.7	0.49	ng/L		11/09/21 18:40	11/13/21 02:05	1
Perf luoroheptanoic acid (PFHpA)	4.4		1.7	0.21	ng/L		11/09/21 18:40	11/13/21 02:05	1
Perf luorooctanoic acid (PFOA)	2.6		1.7	0.72	ng/L		11/09/21 18:40	11/13/21 02:05	1
Perf luorononanoic acid ( PFNA)	0.58	J	1.7	0.23	ng/L		11/09/21 18:40	11/13/21 02:05	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		11/09/21 18:40	11/13/21 02:05	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94	ng/L		11/09/21 18:40	11/13/21 02:05	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		11/09/21 18:40	11/13/21 02:05	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		11/09/21 18:40	11/13/21 02:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.62	ng/L		11/09/21 18:40	11/13/21 02:05	1
Perf luorobutanesulfonic acid ( PFBS)	0.35	J I	1.7	0.17	ng/L		11/09/21 18:40	11/13/21 02:05	1
Perf luorohexanesulfonic acid ( PFHxS)	10		1.7	0.49	ng/L		11/09/21 18:40	11/13/21 02:05	1
Perf luorooctanesulfonic acid ( PFOS)	27		1.7	0.46	ng/L		11/09/21 18:40	11/13/21 02:05	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		11/09/21 18:40	11/13/21 02:05	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		11/09/21 18:40	11/13/21 02:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		11/09/21 18:40	11/13/21 02:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		11/09/21 18:40	11/13/21 02:05	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		11/09/21 18:40	11/13/21 02:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		11/09/21 18:40	11/13/21 02:05	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	112		50 - 150	11/09/21 18:40	11/13/21 02:05	1
13C4 PFHpA	102		50 - 150	11/09/21 18:40	11/13/21 02:05	1
13C4 PFOA	101		50 - 150	11/09/21 18:40	11/13/21 02:05	1
13C5 PFNA	96		50 - 150	11/09/21 18:40	11/13/21 02:05	1
13C2 PFDA	96		50 - 150	11/09/21 18:40	11/13/21 02:05	1
13C2 PFUnA	87		50 - 150	11/09/21 18:40	11/13/21 02:05	1
13C2 PFDoA	76		50 - 150	11/09/21 18:40	11/13/21 02:05	1
13C2 PFTeDA	75		50 - 150	11/09/21 18:40	11/13/21 02:05	1
13C3 PFBS	110		50 - 150	11/09/21 18:40	11/13/21 02:05	1
18O2 PFHxS	95		50 - 150	11/09/21 18:40	11/13/21 02:05	1
13C4 PFOS	101		50 - 150	11/09/21 18:40	11/13/21 02:05	1
d3-NMeFOSAA	89		50 - 150	11/09/21 18:40	11/13/21 02:05	1
d5-NEtFOSAA	88		50 - 150	11/09/21 18:40	11/13/21 02:05	1
13C3 HFPO-DA	85		50 - 150	11/09/21 18:40	11/13/21 02:05	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 DOT MWs

Job ID: 320-81259-1

**Client Sample ID: MW-112-10**

**Lab Sample ID: 320-81259-2**

Date Collected: 10/31/21 11:01

Matrix: Water

Date Received: 11/03/21 14:01

**Method: EPA 537(Mod) - PFAS for QSM 5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perf luorohexanoic acid (PFHxA)	2.9	9	1.7	0.51	ng/L		11/09/21 18:40	11/13/21 02:16	1
Perf luoroheptanoic acid (PFHpA)	4.3	3	1.7	0.22	ng/L		11/09/21 18:40	11/13/21 02:16	1
Perf luorooctanoic acid (PFOA)	2.5		1.7	0.74	ng/L		11/09/21 18:40	11/13/21 02:16	1
Perf luorononanoic acid ( PFNA)	0.91	J	1.7	0.24	ng/L		11/09/21 18:40	11/13/21 02:16	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		11/09/21 18:40	11/13/21 02:16	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		11/09/21 18:40	11/13/21 02:16	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		11/09/21 18:40	11/13/21 02:16	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		11/09/21 18:40	11/13/21 02:16	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.64	ng/L		11/09/21 18:40	11/13/21 02:16	1
Perf luorobutanesulfonic acid ( PFBS)	0.23	J	1.7	0.17	ng/L		11/09/21 18:40	11/13/21 02:16	1
Perf luorohexanesulfonic acid ( PFHxS)	11		1.7	0.50	ng/L		11/09/21 18:40	11/13/21 02:16	1
Perf luorooctanesulfonic acid ( PFOS)	30		1.7	0.47	ng/L		11/09/21 18:40	11/13/21 02:16	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.4	1.0	ng/L		11/09/21 18:40	11/13/21 02:16	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		11/09/21 18:40	11/13/21 02:16	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		11/09/21 18:40	11/13/21 02:16	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		11/09/21 18:40	11/13/21 02:16	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		11/09/21 18:40	11/13/21 02:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		11/09/21 18:40	11/13/21 02:16	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	110		50 - 150	11/09/21 18:40	11/13/21 02:16	1
13C4 PFHpA	114		50 - 150	11/09/21 18:40	11/13/21 02:16	1
13C4 PFOA	97		50 - 150	11/09/21 18:40	11/13/21 02:16	1
13C5 PFNA	100		50 - 150	11/09/21 18:40	11/13/21 02:16	1
13C2 PFDA	98		50 - 150	11/09/21 18:40	11/13/21 02:16	1
13C2 PFUnA	92		50 - 150	11/09/21 18:40	11/13/21 02:16	1
13C2 PFDoA	86		50 - 150	11/09/21 18:40	11/13/21 02:16	1
13C2 PFTeDA	74		50 - 150	11/09/21 18:40	11/13/21 02:16	1
13C3 PFBS	122		50 - 150	11/09/21 18:40	11/13/21 02:16	1
18O2 PFHxS	103		50 - 150	11/09/21 18:40	11/13/21 02:16	1
13C4 PFOS	98		50 - 150	11/09/21 18:40	11/13/21 02:16	1
d3-NMeFOSAA	87		50 - 150	11/09/21 18:40	11/13/21 02:16	1
d5-NEtFOSAA	95		50 - 150	11/09/21 18:40	11/13/21 02:16	1
13C3 HFPO-DA	98		50 - 150	11/09/21 18:40	11/13/21 02:16	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 DOT MWs

Job ID: 320-81259-1

**Client Sample ID: MW-11-15**

**Lab Sample ID: 320-81259-3**

Date Collected: 10/31/21 12:43

Matrix: Water

Date Received: 11/03/21 14:01

**Method: EPA 537(Mod) - PFAS for QSM 5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perf luorohexanoic acid (PFHxA)	16		1.8	0.52	ng/L		11/09/21 18:40	11/13/21 02:26	1
Perf luoroheptanoic acid (PFHpA)	10		1.8	0.22	ng/L		11/09/21 18:40	11/13/21 02:26	1
Perf luorooctanoic acid (PFOA)	9.8		1.8	0.76	ng/L		11/09/21 18:40	11/13/21 02:26	1
Perf luorononanoic acid ( PFNA)	1.3	J	1.8	0.24	ng/L		11/09/21 18:40	11/13/21 02:26	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/09/21 18:40	11/13/21 02:26	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		11/09/21 18:40	11/13/21 02:26	1
Perf luorododecanoic acid ( PFDaA)	0.72	J	1.8	0.49	ng/L		11/09/21 18:40	11/13/21 02:26	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/09/21 18:40	11/13/21 02:26	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/09/21 18:40	11/13/21 02:26	1
Perf luorobutanesulfonic acid ( PFBS)	4.7		1.8	0.18	ng/L		11/09/21 18:40	11/13/21 02:26	1
Perf luorohexanesulfonic acid ( PFHxS)	60		1.8	0.51	ng/L		11/09/21 18:40	11/13/21 02:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/09/21 18:40	11/13/21 02:26	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/09/21 18:40	11/13/21 02:26	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/09/21 18:40	11/13/21 02:26	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		11/09/21 18:40	11/13/21 02:26	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/09/21 18:40	11/13/21 02:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/09/21 18:40	11/13/21 02:26	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		50 - 150	11/09/21 18:40	11/13/21 02:26	1
13C4 PFHpA	92		50 - 150	11/09/21 18:40	11/13/21 02:26	1
13C4 PFOA	100		50 - 150	11/09/21 18:40	11/13/21 02:26	1
13C5 PFNA	100		50 - 150	11/09/21 18:40	11/13/21 02:26	1
13C2 PFDA	102		50 - 150	11/09/21 18:40	11/13/21 02:26	1
13C2 PFUnA	102		50 - 150	11/09/21 18:40	11/13/21 02:26	1
13C2 PFDaA	82		50 - 150	11/09/21 18:40	11/13/21 02:26	1
13C2 PFTeDA	80		50 - 150	11/09/21 18:40	11/13/21 02:26	1
13C3 PFBS	107		50 - 150	11/09/21 18:40	11/13/21 02:26	1
18O2 PFHxS	93		50 - 150	11/09/21 18:40	11/13/21 02:26	1
13C4 PFOS	102		50 - 150	11/09/21 18:40	11/13/21 02:26	1
d3-NMeFOSAA	100		50 - 150	11/09/21 18:40	11/13/21 02:26	1
d5-NEtFOSAA	108		50 - 150	11/09/21 18:40	11/13/21 02:26	1
13C3 HFPO-DA	88		50 - 150	11/09/21 18:40	11/13/21 02:26	1

**Method: EPA 537(Mod) - PFAS for QSM 5. 3, Table B-15 - DL**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perf luorooctanesulfonic acid ( PFOS)	820		18	4.9	ng/L		11/09/21 18:40	11/14/21 05:21	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	103		50 - 150	11/09/21 18:40	11/14/21 05:21	10

Eurofins TestAmerica, Sacramento

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: Q4 DOT MWs

Job ID: 320-81259-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
320-81259-1	MW-12-10	112	102	101	96	96	87	76	75
320-81259-2	MW-112-10	110	114	97	100	98	92	86	74
320-81259-3	MW-11-15	92	92	100	100	102	102	82	80
320-81259-3 - DL	MW-11-15								
LCS 320-541439/2-A	Lab Control Sample	106	102	99	97	103	102	93	93
LCSD 320-541439/3-A	Lab Control Sample Dup	116	116	104	104	104	102	95	93
MB 320-541439/1-A	Method Blank	111	102	103	98	105	100	95	90

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-81259-1	MW-12-10	110	95	101	89	88	85
320-81259-2	MW-112-10	122	103	98	87	95	98
320-81259-3	MW-11-15	107	93	102	100	108	88
320-81259-3 - DL	MW-11-15			103			
LCS 320-541439/2-A	Lab Control Sample	116	100	105	111	104	92
LCSD 320-541439/3-A	Lab Control Sample Dup	122	104	111	114	107	94
MB 320-541439/1-A	Method Blank	115	101	103	102	113	93

#### Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDoA = 13C2 PFDoA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 DOT MWs

Job ID: 320-81259-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-541439/1-A**  
**Matrix: Water**  
**Analysis Batch: 542340**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 541439**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		11/09/21 18:40	11/13/21 01:03	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/09/21 18:40	11/13/21 01:03	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		11/09/21 18:40	11/13/21 01:03	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/09/21 18:40	11/13/21 01:03	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/09/21 18:40	11/13/21 01:03	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/09/21 18:40	11/13/21 01:03	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/09/21 18:40	11/13/21 01:03	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/09/21 18:40	11/13/21 01:03	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		11/09/21 18:40	11/13/21 01:03	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/09/21 18:40	11/13/21 01:03	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		11/09/21 18:40	11/13/21 01:03	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		11/09/21 18:40	11/13/21 01:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		11/09/21 18:40	11/13/21 01:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/09/21 18:40	11/13/21 01:03	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/09/21 18:40	11/13/21 01:03	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/09/21 18:40	11/13/21 01:03	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/09/21 18:40	11/13/21 01:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/09/21 18:40	11/13/21 01:03	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	111		50 - 150	11/09/21 18:40	11/13/21 01:03	1
13C4 PFHpA	102		50 - 150	11/09/21 18:40	11/13/21 01:03	1
13C4 PFOA	103		50 - 150	11/09/21 18:40	11/13/21 01:03	1
13C5 PFNA	98		50 - 150	11/09/21 18:40	11/13/21 01:03	1
13C2 PFDA	105		50 - 150	11/09/21 18:40	11/13/21 01:03	1
13C2 PFUnA	100		50 - 150	11/09/21 18:40	11/13/21 01:03	1
13C2 PFDoA	95		50 - 150	11/09/21 18:40	11/13/21 01:03	1
13C2 PFTeDA	90		50 - 150	11/09/21 18:40	11/13/21 01:03	1
13C3 PFBS	115		50 - 150	11/09/21 18:40	11/13/21 01:03	1
18O2 PFHxS	101		50 - 150	11/09/21 18:40	11/13/21 01:03	1
13C4 PFOS	103		50 - 150	11/09/21 18:40	11/13/21 01:03	1
d3-NMeFOSAA	102		50 - 150	11/09/21 18:40	11/13/21 01:03	1
d5-NEtFOSAA	113		50 - 150	11/09/21 18:40	11/13/21 01:03	1
13C3 HFPO-DA	93		50 - 150	11/09/21 18:40	11/13/21 01:03	1

**Lab Sample ID: LCS 320-541439/2-A**  
**Matrix: Water**  
**Analysis Batch: 542340**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 541439**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	40.0	35.1		ng/L		88	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	36.6		ng/L		92	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	38.1		ng/L		95	71 - 133
Perfluorononanoic acid (PFNA)	40.0	37.6		ng/L		94	69 - 130

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 DOT MWs

Job ID: 320-81259-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-541439/2-A**  
**Matrix: Water**  
**Analysis Batch: 542340**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 541439**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	38.5		ng/L		96	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	34.1		ng/L		85	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	39.2		ng/L		98	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	35.4		ng/L		88	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	33.9		ng/L		85	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	29.0		ng/L		82	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.4		ng/L		92	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	32.4		ng/L		87	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	35.0		ng/L		88	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.3		ng/L		98	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	32.0		ng/L		86	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	38.1		ng/L		95	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	33.8		ng/L		90	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	34.8		ng/L		92	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	106		50 - 150
13C4 PFHpA	102		50 - 150
13C4 PFOA	99		50 - 150
13C5 PFNA	97		50 - 150
13C2 PFDA	103		50 - 150
13C2 PFUnA	102		50 - 150
13C2 PFDoA	93		50 - 150
13C2 PFTeDA	93		50 - 150
13C3 PFBS	116		50 - 150
18O2 PFHxS	100		50 - 150
13C4 PFOS	105		50 - 150
d3-NMeFOSAA	111		50 - 150
d5-NEtFOSAA	104		50 - 150
13C3 HFPO-DA	92		50 - 150

**Lab Sample ID: LCSD 320-541439/3-A**  
**Matrix: Water**  
**Analysis Batch: 542340**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 541439**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	
								RPD	Limit
Perfluorohexanoic acid (PFHxA)	40.0	35.3		ng/L		88	72 - 129	1	30
Perfluoroheptanoic acid (PFHpA)	40.0	35.3		ng/L		88	72 - 130	4	30
Perfluorooctanoic acid (PFOA)	40.0	37.6		ng/L		94	71 - 133	1	30

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Q4 DOT MWs

Job ID: 320-81259-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-541439/3-A**  
**Matrix: Water**  
**Analysis Batch: 542340**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 541439**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	38.7		ng/L		97	69 - 130	3	30
Perfluorodecanoic acid (PFDA)	40.0	40.2		ng/L		101	71 - 129	4	30
Perfluoroundecanoic acid (PFUnA)	40.0	38.8		ng/L		97	69 - 133	13	30
Perfluorododecanoic acid (PFDoA)	40.0	41.7		ng/L		104	72 - 134	6	30
Perfluorotridecanoic acid (PFTriA)	40.0	34.8		ng/L		87	65 - 144	2	30
Perfluorotetradecanoic acid (PFTeA)	40.0	36.9		ng/L		92	71 - 132	8	30
Perfluorobutanesulfonic acid (PFBS)	35.4	29.6		ng/L		84	72 - 130	2	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.3		ng/L		94	68 - 131	3	30
Perfluorooctanesulfonic acid (PFOS)	37.1	34.7		ng/L		94	65 - 140	7	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	35.9		ng/L		90	65 - 136	2	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.1		ng/L		98	61 - 135	0	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	31.1		ng/L		83	77 - 137	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.2		ng/L		100	72 - 132	5	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	35.2		ng/L		93	76 - 136	4	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	36.6		ng/L		97	81 - 141	5	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	116		50 - 150
13C4 PFHpA	116		50 - 150
13C4 PFOA	104		50 - 150
13C5 PFNA	104		50 - 150
13C2 PFDA	104		50 - 150
13C2 PFUnA	102		50 - 150
13C2 PFDoA	95		50 - 150
13C2 PFTeDA	93		50 - 150
13C3 PFBS	122		50 - 150
18O2 PFHxS	104		50 - 150
13C4 PFOS	111		50 - 150
d3-NMeFOSAA	114		50 - 150
d5-NEtFOSAA	107		50 - 150
13C3 HFPO-DA	94		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
 Project/Site: Q4 DOT MWs

Job ID: 320-81259-1

## LCMS

### Prep Batch: 541439

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-81259-1	MW-12-10	Total/NA	Water	3535	
320-81259-2	MW-112-10	Total/NA	Water	3535	
320-81259-3 - DL	MW-11-15	Total/NA	Water	3535	
320-81259-3	MW-11-15	Total/NA	Water	3535	
MB 320-541439/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-541439/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-541439/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 542340

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-81259-1	MW-12-10	Total/NA	Water	EPA 537(Mod)	541439
320-81259-2	MW-112-10	Total/NA	Water	EPA 537(Mod)	541439
320-81259-3	MW-11-15	Total/NA	Water	EPA 537(Mod)	541439
MB 320-541439/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	541439
LCS 320-541439/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	541439
LCSD 320-541439/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	541439

### Analysis Batch: 542528

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-81259-3 - DL	MW-11-15	Total/NA	Water	EPA 537(Mod)	541439

# Lab Chronicle

Client: Shannon & Wilson, Inc  
 Project/Site: Q4 DOT MWs

Job ID: 320-81259-1

**Client Sample ID: MW-12-10**

**Lab Sample ID: 320-81259-1**

Date Collected: 10/31/21 11:11

Matrix: Water

Date Received: 11/03/21 14:01

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			293.4 mL	10.0 mL	541439	11/09/21 18:40	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			542340	11/13/21 02:05	S1M	TAL SAC

**Client Sample ID: MW-112-10**

**Lab Sample ID: 320-81259-2**

Date Collected: 10/31/21 11:01

Matrix: Water

Date Received: 11/03/21 14:01

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			287 mL	10.0 mL	541439	11/09/21 18:40	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			542340	11/13/21 02:16	S1M	TAL SAC

**Client Sample ID: MW-11-15**

**Lab Sample ID: 320-81259-3**

Date Collected: 10/31/21 12:43

Matrix: Water

Date Received: 11/03/21 14:01

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			278 mL	10.0 mL	541439	11/09/21 18:40	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			542340	11/13/21 02:26	S1M	TAL SAC
Total/NA	Prep	3535	DL		278 mL	10.0 mL	541439	11/09/21 18:40	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	10			542528	11/14/21 05:21	K1S	TAL SAC

**Laboratory References:**

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 DOT MWs

Job ID: 320-81259-1

## Laboratory: Eurofins TestAmerica, Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

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# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 DOT MWs

Job ID: 320-81259-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	TAL SAC TAL SAC

**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: Q4 DOT MWs

Job ID: 320-81259-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-81259-1	MW-12-10	Water	10/31/21 11:11	11/03/21 14:01
320-81259-2	MW-112-10	Water	10/31/21 11:01	11/03/21 14:01
320-81259-3	MW-11-15	Water	10/31/21 12:43	11/03/21 14:01

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Address: \_\_\_\_\_

TAL-8210

Regulatory Program:  DW  NPDES  RCRA  Other:

Client Contact Company Name: <b>Shannon &amp; Wilson</b> Address: _____ City/State/Zip: _____ Phone: _____ Fax: _____ Project Name: <b>Q4 DOT MWs</b> Site: _____ P O # _____		Project Manager: <b>David A. Hooker</b> Tel/Email: _____ Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below _____ <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Site Contact: <b>Kristen E.</b> Date: _____ Lab Contact: _____ Carrier: _____ CCC No: _____ of _____ COCs Sampler: _____ For Lab Use Only: Walk-in Client: _____ Lab Sampling: _____ Job / SDG No.: _____ Sample Specific Notes: _____	
Project Manager: <b>David A. Hooker</b> Tel/Email: _____		Site Contact: <b>Kristen E.</b> Date: _____ Lab Contact: _____ Carrier: _____ CCC No: _____ of _____ COCs Sampler: _____ For Lab Use Only: Walk-in Client: _____ Lab Sampling: _____ Job / SDG No.: _____ Sample Specific Notes: _____			
Sample Identification MW-12-10 MW-112-10 MW-11-15		Filtered Sample (Y / N) Perform MS / MSD (Y / N) XXXX XXXX XXXX		Sample Type (C=Comp, G=Grab) Matrix # of Cont. 10-31-21 1111 G W 2 1101 G W 2 1243 G W 2	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HN03; 5=NaOH; 6= Other Possible Hazard Identification: _____ Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.					
Special Instructions/QC Requirements & Comments: _____					
Custody Seal No.: <b>15046621504665</b> Company: _____		Cooler Temp. (C): Obs'd: <b>2.5</b> Corr'd: <b>2.5</b> Received by: <b>[Signature]</b> Date/Time: <b>11/30/2021 14:01</b>		Therm ID No.: <b>LE05</b> Date/Time: _____ Company: _____ Date/Time: _____ Company: _____ Date/Time: _____ Company: _____	

Return to 11-421



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-81259-1

**Login Number: 81259**

**List Number: 1**

**Creator: Cahill, Nicholas P**

**List Source: Eurofins TestAmerica, Sacramento**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1504662/1504663
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	Refer to Job Narrative for details.
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Laboratory Data Review Checklist

Completed By:

Justin Risley

Title:

Engineering Staff

Date:

November 16, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-81259-1

Laboratory Report Date:

11/15/2021

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

Laboratory Report Date:

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

Analyses were performed by the Eurofins Laboratory in West Sacramento, CA. The laboratory is approved by the DEC CS program and certified under the Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP) for the requested analyses.

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

The samples were not transferred to a network laboratory or subcontracted out.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

The COC is missing information and was not relinquished by sender. However, the information necessary to log in the samples and track the -method holding times was present.

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

Samples analyzed for PFAS do not require preservation other than temperature control.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form notes that the samples arrived in good condition.

Laboratory Report Date:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes  No  N/A  Comments:

The sample receipt form notes a missing COC signature and states that the field sampler is not listed.

- e. Data quality or usability affected?

Comments:

The missing information on the COC appears to have been an oversight rather than a breach of custody. Only three days elapsed between sample collection and receipt by the laboratory. A review of the shipping information accounts for these three days. The sample receipt form also indicates that the custody seals were present and intact on the cooler. The data quality/usability is not affected.

#### 4. Case Narrative

- a. Present and understandable?

Yes  No  N/A  Comments:

- b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte.

Method EPA 537(Mod): The results for sample *MW-11-15* were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-541439.

Method 3535: The sample *MW-11-15* exhibited a yellow hue and contain a thin layer of sediment at the bottom of the bottle prior to extraction.

Method 3535: The samples *MW-12-10* and *MW-112-10* exhibited a yellow hue and contained floating particulates at the bottom of the bottle prior to extraction.



Laboratory Report Date:

c. Were all corrective actions documented?

Yes  No  N/A  Comments:

Sample *MW-11-15* was diluted due to the concentrations of target analytes exceeding the instrument's calibration range. The laboratory corrected the internal standard counts with the dilution factor.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The laboratory applied the 'I' qualifier to results affected by transition mass ratio failures. The case narrative notes that these results may have some high bias.

## 5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

The reporting limits (RLs) are less than the applicable DEC regulatory limit for the target PFAS.

e. Data quality or usability affected?

The data quality/usability is not affected.

## 6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Laboratory Report Date:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; target PFAS were not detected in the method blank sample.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

The samples were not affected by laboratory contamination; see above.

v. Data quality or usability affected?

Comments:

The data quality/usability is not affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A  Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals/Inorganics analyses were not requested for this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

Laboratory Report Date:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; method accuracy and precision were demonstrated to be within acceptable limits.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

Qualification was not required; see above.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality/usability is not affected.

- c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

- i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

MS/MSD samples were not analyzed with this work order; however, the laboratory analyzed LCS and LCSD samples to assess laboratory accuracy and precision.

- ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals/Inorganics analyses were not requested for this work order.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; MS and MSD samples were not analyzed for this work order.

Laboratory Report Date:

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality/usability is not affected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes  No  N/A  Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A  Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

There were no IDA recovery failures for the reported results.

iv. Data quality or usability affected?

Comments:

The data quality/usability is not affected.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes  No  N/A  Comments:

PFAS are not volatile compounds. A trip blank is not required for the requested analysis.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

Laboratory Report Date:

iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; a trip blank is not required for the requested analysis.

v. Data quality or usability affected?

Comments:

The data quality/usability is not affected.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

ii. Submitted blind to lab?

Yes  No  N/A  Comments:The field duplicate samples *MW-12-10* and *MW-112-10* were submitted with this work order.iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration $R_2$  = Field Duplicate ConcentrationYes  No  N/A  Comments:The relative precision demonstrated between the detected results of the field duplicate samples was within the recommended DQO of 30% for all analytes except perfluorononanoic acid (PFNA). The PFNA results of samples *MW-12-10* and *MW-112-10* are considered estimated and flagged 'J' to identify the imprecision.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality/usability is not affected.

Laboratory Report Date:

- g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

Reusable equipment was not used in the sampling procedure; therefore, an equipment blank is not required.

- i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

- ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

- iii. Data quality or usability affected?

Comments:

The data quality/usability is not affected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

- a. Defined and appropriate?

Yes  No  N/A  Comments:

The perfluorobutanesulfonic acid (PFBS) result of sample *MW-12-10* was affected by a transition mass ratio failure and quantitated manually. We consider this result an estimate and have applied the 'J' qualifier.

## ANALYTICAL REPORT

Eurofins Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

Laboratory Job ID: 320-84757-1  
Client Project/Site: Gustavus MW

For:  
Shannon & Wilson, Inc  
2355 Hill Rd.  
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger



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Authorized for release by:  
2/28/2022 12:54:16 PM

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*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

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## Job ID: 320-84757-1

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### Laboratory: Eurofins Sacramento

#### Narrative

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#### Job Narrative 320-84757-1

#### Receipt

The samples were received on 2/12/2022 10:54 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.0° C.

#### LCMS

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. MW-2-30 (320-84757-3), MW-6-20 (320-84757-12) and MW-9-30 (320-84757-14)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-565791.

Method 3535: The following samples were yellow prior to extraction: MW-108-20 (320-84757-1), MW-1-40 (320-84757-2), MW-10-20 (320-84757-5), MW-105-20 (320-84757-6), MW-3-40 (320-84757-7), MW-8-20 (320-84757-8) and MW-9-30 (320-84757-14).

Method 3535: The following samples contained a thin layer of sediment at the bottom of the bottle prior to extraction: MW-1-40 (320-84757-2), MW-2-30 (320-84757-3) and MW-9-30 (320-84757-14).

Method 3535: The following samples contained floating particulates in the sample bottle prior to extraction: MW-108-20 (320-84757-1), MW-10-20 (320-84757-5), MW-105-20 (320-84757-6), MW-3-40 (320-84757-7), MW-8-20 (320-84757-8), MW-5-20 (320-84757-9), MW-102-30 (320-84757-11), MW-6-20 (320-84757-12) and GAC (320-84757-13).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

## Client Sample ID: MW-108-20

Lab Sample ID: 320-84757-1

No Detections.

## Client Sample ID: MW-1-40

Lab Sample ID: 320-84757-2

No Detections.

## Client Sample ID: MW-2-30

Lab Sample ID: 320-84757-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.94	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.61	J I	1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-1-15

Lab Sample ID: 320-84757-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.1	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.23	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.64	J	1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-10-20

Lab Sample ID: 320-84757-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	8.7		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.9		1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.6	J	1.9	0.79	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.73	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	11		1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	26		1.9	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-105-20

Lab Sample ID: 320-84757-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.23	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.91	J	1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.9		1.9	0.52	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-3-40

Lab Sample ID: 320-84757-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.3	J	1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.48	J	1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.74	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.8		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	7.1		1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-8-20

Lab Sample ID: 320-84757-8

No Detections.

## Client Sample ID: MW-5-20

Lab Sample ID: 320-84757-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.22	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.1	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.9		1.9	0.52	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

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# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

## Client Sample ID: MW-2-20

## Lab Sample ID: 320-84757-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	190		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	88		1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	30		1.9	0.79	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	4.9		1.9	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.65	J	1.9	0.29	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	6.2		1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	52		1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	260		1.9	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-102-30

## Lab Sample ID: 320-84757-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.78	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-6-20

## Lab Sample ID: 320-84757-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.90	J I	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: GAC

## Lab Sample ID: 320-84757-13

No Detections.

## Client Sample ID: MW-9-30

## Lab Sample ID: 320-84757-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	6.4		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.8		1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.5	J	1.9	0.81	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.75	J I	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	12		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	45		1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-11-15

## Lab Sample ID: 320-84757-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	14		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	8.7		1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	12		1.9	0.81	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.81	J	1.9	0.26	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.5	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	51		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	130		1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: EB-11-15

## Lab Sample ID: 320-84757-16

No Detections.

## Client Sample ID: MW-111-15

## Lab Sample ID: 320-84757-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	12		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	8.5		1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	11		1.9	0.81	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.65	J	1.9	0.26	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

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# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

**Client Sample ID: MW-111-15 (Continued)**

**Lab Sample ID: 320-84757-17**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	1.4	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	52		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	120		1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

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# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

**Client Sample ID: MW-108-20**

**Lab Sample ID: 320-8475 7-1**

Date Collected 02/ 07/ 22 15 :31

Matrix: Water

Date Received 02/ 12/ 22 10:54

**Method EPA 5 37(Mbd) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		02/15/22 04:28	02/27/22 19:17	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		02/15/22 04:28	02/27/22 19:17	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		02/15/22 04:28	02/27/22 19:17	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		02/15/22 04:28	02/27/22 19:17	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		02/15/22 04:28	02/27/22 19:17	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		02/15/22 04:28	02/27/22 19:17	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		02/15/22 04:28	02/27/22 19:17	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/15/22 04:28	02/27/22 19:17	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		02/15/22 04:28	02/27/22 19:17	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		02/15/22 04:28	02/27/22 19:17	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		02/15/22 04:28	02/27/22 19:17	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		02/15/22 04:28	02/27/22 19:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		02/15/22 04:28	02/27/22 19:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		02/15/22 04:28	02/27/22 19:17	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		02/15/22 04:28	02/27/22 19:17	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		02/15/22 04:28	02/27/22 19:17	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		02/15/22 04:28	02/27/22 19:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		02/15/22 04:28	02/27/22 19:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	77		50 - 150	02/15/22 04:28	02/27/22 19:17	1
13C4 PFHpA	80		50 - 150	02/15/22 04:28	02/27/22 19:17	1
13C4 PFOA	78		50 - 150	02/15/22 04:28	02/27/22 19:17	1
13C5 PFNA	77		50 - 150	02/15/22 04:28	02/27/22 19:17	1
13C2 PFDA	72		50 - 150	02/15/22 04:28	02/27/22 19:17	1
13C2 PFUnA	71		50 - 150	02/15/22 04:28	02/27/22 19:17	1
13C2 PFDoA	74		50 - 150	02/15/22 04:28	02/27/22 19:17	1
13C2 PFTeDA	73		50 - 150	02/15/22 04:28	02/27/22 19:17	1
13C3 PFBS	78		50 - 150	02/15/22 04:28	02/27/22 19:17	1
18O2 PFHxS	74		50 - 150	02/15/22 04:28	02/27/22 19:17	1
13C4 PFOS	76		50 - 150	02/15/22 04:28	02/27/22 19:17	1
d3-NMeFOSAA	74		50 - 150	02/15/22 04:28	02/27/22 19:17	1
d5-NEtFOSAA	85		50 - 150	02/15/22 04:28	02/27/22 19:17	1
13C3 HFPO-DA	75		50 - 150	02/15/22 04:28	02/27/22 19:17	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

**Client Sample ID: MW-1-40**

**Lab Sample ID: 320-8475 7-2**

**Date Collected 02/ 08/ 22 13:40**

**Matrix: Water**

**Date Received 02/ 12/ 22 10:54**

**Method EPA 5 37(Mbd) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.56	ng/L		02/15/22 04:28	02/27/22 19:27	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		02/15/22 04:28	02/27/22 19:27	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		02/15/22 04:28	02/27/22 19:27	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		02/15/22 04:28	02/27/22 19:27	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		02/15/22 04:28	02/27/22 19:27	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		02/15/22 04:28	02/27/22 19:27	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		02/15/22 04:28	02/27/22 19:27	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		02/15/22 04:28	02/27/22 19:27	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		02/15/22 04:28	02/27/22 19:27	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		02/15/22 04:28	02/27/22 19:27	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.55	ng/L		02/15/22 04:28	02/27/22 19:27	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		02/15/22 04:28	02/27/22 19:27	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		02/15/22 04:28	02/27/22 19:27	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.3	ng/L		02/15/22 04:28	02/27/22 19:27	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		02/15/22 04:28	02/27/22 19:27	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		02/15/22 04:28	02/27/22 19:27	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		02/15/22 04:28	02/27/22 19:27	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		02/15/22 04:28	02/27/22 19:27	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	85		50 - 150	02/15/22 04:28	02/27/22 19:27	1
13C4 PFHpA	89		50 - 150	02/15/22 04:28	02/27/22 19:27	1
13C4 PFOA	91		50 - 150	02/15/22 04:28	02/27/22 19:27	1
13C5 PFNA	83		50 - 150	02/15/22 04:28	02/27/22 19:27	1
13C2 PFDA	84		50 - 150	02/15/22 04:28	02/27/22 19:27	1
13C2 PFUnA	81		50 - 150	02/15/22 04:28	02/27/22 19:27	1
13C2 PFDoA	86		50 - 150	02/15/22 04:28	02/27/22 19:27	1
13C2 PFTeDA	82		50 - 150	02/15/22 04:28	02/27/22 19:27	1
13C3 PFBS	86		50 - 150	02/15/22 04:28	02/27/22 19:27	1
18O2 PFHxS	80		50 - 150	02/15/22 04:28	02/27/22 19:27	1
13C4 PFOS	82		50 - 150	02/15/22 04:28	02/27/22 19:27	1
d3-NMeFOSAA	86		50 - 150	02/15/22 04:28	02/27/22 19:27	1
d5-NEtFOSAA	93		50 - 150	02/15/22 04:28	02/27/22 19:27	1
13C3 HFPO-DA	85		50 - 150	02/15/22 04:28	02/27/22 19:27	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

**Client Sample ID: MW-2-30**

**Lab Sample ID: 320-8475 7-3**

Date Collected 02/ 09/ 22 10:05

Matrix: Water

Date Received 02/ 12/ 22 10:54

**Method EPA 5 37(Mbd) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		02/15/22 04:28	02/27/22 19:37	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		02/15/22 04:28	02/27/22 19:37	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		02/15/22 04:28	02/27/22 19:37	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		02/15/22 04:28	02/27/22 19:37	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		02/15/22 04:28	02/27/22 19:37	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		02/15/22 04:28	02/27/22 19:37	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		02/15/22 04:28	02/27/22 19:37	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/15/22 04:28	02/27/22 19:37	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		02/15/22 04:28	02/27/22 19:37	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.94</b>	<b>J</b>	1.9	0.19	ng/L		02/15/22 04:28	02/27/22 19:37	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.61</b>	<b>J I</b>	1.9	0.53	ng/L		02/15/22 04:28	02/27/22 19:37	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		02/15/22 04:28	02/27/22 19:37	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		02/15/22 04:28	02/27/22 19:37	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		02/15/22 04:28	02/27/22 19:37	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		02/15/22 04:28	02/27/22 19:37	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		02/15/22 04:28	02/27/22 19:37	1
11-Chloroeicosadecafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		02/15/22 04:28	02/27/22 19:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		02/15/22 04:28	02/27/22 19:37	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		50 - 150	02/15/22 04:28	02/27/22 19:37	1
13C4 PFHpA	90		50 - 150	02/15/22 04:28	02/27/22 19:37	1
13C4 PFOA	92		50 - 150	02/15/22 04:28	02/27/22 19:37	1
13C5 PFNA	89		50 - 150	02/15/22 04:28	02/27/22 19:37	1
13C2 PFDA	86		50 - 150	02/15/22 04:28	02/27/22 19:37	1
13C2 PFUnA	87		50 - 150	02/15/22 04:28	02/27/22 19:37	1
13C2 PFDoA	84		50 - 150	02/15/22 04:28	02/27/22 19:37	1
13C2 PFTeDA	85		50 - 150	02/15/22 04:28	02/27/22 19:37	1
13C3 PFBS	84		50 - 150	02/15/22 04:28	02/27/22 19:37	1
18O2 PFHxS	84		50 - 150	02/15/22 04:28	02/27/22 19:37	1
13C4 PFOS	85		50 - 150	02/15/22 04:28	02/27/22 19:37	1
d3-NMeFOSAA	85		50 - 150	02/15/22 04:28	02/27/22 19:37	1
d5-NEtFOSAA	91		50 - 150	02/15/22 04:28	02/27/22 19:37	1
13C3 HFPO-DA	87		50 - 150	02/15/22 04:28	02/27/22 19:37	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

**Client Sample ID: MW-1-1 5**

**Lab Sample ID: 320-8475 7-4**

Date Collected 02/ 08/ 22 14:26

Matrix: Water

Date Received 02/ 12/ 22 10:54

**Method EPA 5 37(Mbd) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>1.1</b>	<b>J</b>	1.9	0.54	ng/L		02/15/22 04:28	02/27/22 19:48	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		02/15/22 04:28	02/27/22 19:48	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		02/15/22 04:28	02/27/22 19:48	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		02/15/22 04:28	02/27/22 19:48	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		02/15/22 04:28	02/27/22 19:48	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		02/15/22 04:28	02/27/22 19:48	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		02/15/22 04:28	02/27/22 19:48	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/15/22 04:28	02/27/22 19:48	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		02/15/22 04:28	02/27/22 19:48	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.23</b>	<b>J</b>	1.9	0.19	ng/L		02/15/22 04:28	02/27/22 19:48	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.64</b>	<b>J</b>	1.9	0.53	ng/L		02/15/22 04:28	02/27/22 19:48	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		02/15/22 04:28	02/27/22 19:48	1
N-methylperfluorooctanesulfonamideacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		02/15/22 04:28	02/27/22 19:48	1
N-ethylperfluorooctanesulfonamideacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		02/15/22 04:28	02/27/22 19:48	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		02/15/22 04:28	02/27/22 19:48	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		02/15/22 04:28	02/27/22 19:48	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		02/15/22 04:28	02/27/22 19:48	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		02/15/22 04:28	02/27/22 19:48	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	79		50 - 150	02/15/22 04:28	02/27/22 19:48	1
13C4 PFHpA	91		50 - 150	02/15/22 04:28	02/27/22 19:48	1
13C4 PFOA	85		50 - 150	02/15/22 04:28	02/27/22 19:48	1
13C5 PFNA	79		50 - 150	02/15/22 04:28	02/27/22 19:48	1
13C2 PFDA	81		50 - 150	02/15/22 04:28	02/27/22 19:48	1
13C2 PFUnA	83		50 - 150	02/15/22 04:28	02/27/22 19:48	1
13C2 PFDoA	81		50 - 150	02/15/22 04:28	02/27/22 19:48	1
13C2 PFTeDA	82		50 - 150	02/15/22 04:28	02/27/22 19:48	1
13C3 PFBS	86		50 - 150	02/15/22 04:28	02/27/22 19:48	1
18O2 PFHxS	82		50 - 150	02/15/22 04:28	02/27/22 19:48	1
13C4 PFOS	80		50 - 150	02/15/22 04:28	02/27/22 19:48	1
d3-NMeFOSAA	85		50 - 150	02/15/22 04:28	02/27/22 19:48	1
d5-NEtFOSAA	91		50 - 150	02/15/22 04:28	02/27/22 19:48	1
13C3 HFPO-DA	83		50 - 150	02/15/22 04:28	02/27/22 19:48	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

**Client Sample ID: MW-10-20**

**Lab Sample ID: 320-8475 7-5**

Date Collected 02/ 08/ 22 10:19

Matrix: Water

Date Received 02/ 12/ 22 10:54

**Method EPA 5 37(Mbd) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	8.7		1.9	0.54	ng/L		02/15/22 04:28	02/27/22 19:58	1
Perfluoroheptanoic acid (PFHpA)	1.9		1.9	0.23	ng/L		02/15/22 04:28	02/27/22 19:58	1
Perfluorooctanoic acid (PFOA)	1.6	J	1.9	0.79	ng/L		02/15/22 04:28	02/27/22 19:58	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		02/15/22 04:28	02/27/22 19:58	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		02/15/22 04:28	02/27/22 19:58	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		02/15/22 04:28	02/27/22 19:58	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		02/15/22 04:28	02/27/22 19:58	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/15/22 04:28	02/27/22 19:58	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		02/15/22 04:28	02/27/22 19:58	1
Perfluorobutanesulfonic acid (PFBS)	0.73	J	1.9	0.19	ng/L		02/15/22 04:28	02/27/22 19:58	1
Perfluorohexanesulfonic acid (PFHxS)	11		1.9	0.53	ng/L		02/15/22 04:28	02/27/22 19:58	1
Perfluorooctanesulfonic acid (PFOS)	26		1.9	0.50	ng/L		02/15/22 04:28	02/27/22 19:58	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		02/15/22 04:28	02/27/22 19:58	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		02/15/22 04:28	02/27/22 19:58	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		02/15/22 04:28	02/27/22 19:58	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		02/15/22 04:28	02/27/22 19:58	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		02/15/22 04:28	02/27/22 19:58	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		02/15/22 04:28	02/27/22 19:58	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	85		50 - 150	02/15/22 04:28	02/27/22 19:58	1
13C4 PFHpA	86		50 - 150	02/15/22 04:28	02/27/22 19:58	1
13C4 PFOA	86		50 - 150	02/15/22 04:28	02/27/22 19:58	1
13C5 PFNA	87		50 - 150	02/15/22 04:28	02/27/22 19:58	1
13C2 PFDA	87		50 - 150	02/15/22 04:28	02/27/22 19:58	1
13C2 PFUnA	85		50 - 150	02/15/22 04:28	02/27/22 19:58	1
13C2 PFDoA	85		50 - 150	02/15/22 04:28	02/27/22 19:58	1
13C2 PFTeDA	85		50 - 150	02/15/22 04:28	02/27/22 19:58	1
13C3 PFBS	86		50 - 150	02/15/22 04:28	02/27/22 19:58	1
18O2 PFHxS	81		50 - 150	02/15/22 04:28	02/27/22 19:58	1
13C4 PFOS	86		50 - 150	02/15/22 04:28	02/27/22 19:58	1
d3-NMeFOSAA	88		50 - 150	02/15/22 04:28	02/27/22 19:58	1
d5-NEtFOSAA	91		50 - 150	02/15/22 04:28	02/27/22 19:58	1
13C3 HFPO-DA	79		50 - 150	02/15/22 04:28	02/27/22 19:58	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

**Client Sample ID: MW-105 -20**

**Lab Sample ID: 320-8475 7-6**

Date Collected 02/ 08/ 22 11:1 3

Matrix: Water

Date Received 02/ 12/ 22 10:54

**Method EPA 5 37(Mbd) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.56	ng/L		02/15/22 04:28	02/27/22 20:08	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		02/15/22 04:28	02/27/22 20:08	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		02/15/22 04:28	02/27/22 20:08	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		02/15/22 04:28	02/27/22 20:08	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		02/15/22 04:28	02/27/22 20:08	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		02/15/22 04:28	02/27/22 20:08	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		02/15/22 04:28	02/27/22 20:08	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/15/22 04:28	02/27/22 20:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		02/15/22 04:28	02/27/22 20:08	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.23</b>	<b>J</b>	1.9	0.19	ng/L		02/15/22 04:28	02/27/22 20:08	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.91</b>	<b>J</b>	1.9	0.55	ng/L		02/15/22 04:28	02/27/22 20:08	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>2.9</b>		1.9	0.52	ng/L		02/15/22 04:28	02/27/22 20:08	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		02/15/22 04:28	02/27/22 20:08	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		02/15/22 04:28	02/27/22 20:08	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		02/15/22 04:28	02/27/22 20:08	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		02/15/22 04:28	02/27/22 20:08	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		02/15/22 04:28	02/27/22 20:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		02/15/22 04:28	02/27/22 20:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	87		50 - 150	02/15/22 04:28	02/27/22 20:08	1
13C4 PFHpA	86		50 - 150	02/15/22 04:28	02/27/22 20:08	1
13C4 PFOA	88		50 - 150	02/15/22 04:28	02/27/22 20:08	1
13C5 PFNA	83		50 - 150	02/15/22 04:28	02/27/22 20:08	1
13C2 PFDA	79		50 - 150	02/15/22 04:28	02/27/22 20:08	1
13C2 PFUnA	83		50 - 150	02/15/22 04:28	02/27/22 20:08	1
13C2 PFDoA	87		50 - 150	02/15/22 04:28	02/27/22 20:08	1
13C2 PFTeDA	81		50 - 150	02/15/22 04:28	02/27/22 20:08	1
13C3 PFBS	88		50 - 150	02/15/22 04:28	02/27/22 20:08	1
18O2 PFHxS	85		50 - 150	02/15/22 04:28	02/27/22 20:08	1
13C4 PFOS	89		50 - 150	02/15/22 04:28	02/27/22 20:08	1
d3-NMeFOSAA	82		50 - 150	02/15/22 04:28	02/27/22 20:08	1
d5-NEtFOSAA	88		50 - 150	02/15/22 04:28	02/27/22 20:08	1
13C3 HFPO-DA	79		50 - 150	02/15/22 04:28	02/27/22 20:08	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

**Client Sample ID: MW-3-40**

**Lab Sample ID: 320-8475 7-7**

Date Collected 02/ 09/ 22 14:51

Matrix: Water

Date Received 02/ 12/ 22 10:54

**Method EPA 5 37(Mbd) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	1.3	J	1.9	0.55	ng/L		02/15/22 04:28	02/27/22 20:18	1
Perfluoroheptanoic acid (PFHpA)	0.48	J	1.9	0.24	ng/L		02/15/22 04:28	02/27/22 20:18	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		02/15/22 04:28	02/27/22 20:18	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		02/15/22 04:28	02/27/22 20:18	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		02/15/22 04:28	02/27/22 20:18	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		02/15/22 04:28	02/27/22 20:18	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		02/15/22 04:28	02/27/22 20:18	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/15/22 04:28	02/27/22 20:18	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		02/15/22 04:28	02/27/22 20:18	1
Perfluorobutanesulfonic acid (PFBS)	0.74	J	1.9	0.19	ng/L		02/15/22 04:28	02/27/22 20:18	1
Perfluorohexanesulfonic acid (PFHxS)	6.8		1.9	0.54	ng/L		02/15/22 04:28	02/27/22 20:18	1
Perfluorooctanesulfonic acid (PFOS)	7.1		1.9	0.51	ng/L		02/15/22 04:28	02/27/22 20:18	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		02/15/22 04:28	02/27/22 20:18	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		02/15/22 04:28	02/27/22 20:18	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		02/15/22 04:28	02/27/22 20:18	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		02/15/22 04:28	02/27/22 20:18	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		02/15/22 04:28	02/27/22 20:18	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		02/15/22 04:28	02/27/22 20:18	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	83		50 - 150	02/15/22 04:28	02/27/22 20:18	1
13C4 PFHpA	92		50 - 150	02/15/22 04:28	02/27/22 20:18	1
13C4 PFOA	98		50 - 150	02/15/22 04:28	02/27/22 20:18	1
13C5 PFNA	89		50 - 150	02/15/22 04:28	02/27/22 20:18	1
13C2 PFDA	84		50 - 150	02/15/22 04:28	02/27/22 20:18	1
13C2 PFUnA	85		50 - 150	02/15/22 04:28	02/27/22 20:18	1
13C2 PFDoA	81		50 - 150	02/15/22 04:28	02/27/22 20:18	1
13C2 PFTeDA	83		50 - 150	02/15/22 04:28	02/27/22 20:18	1
13C3 PFBS	85		50 - 150	02/15/22 04:28	02/27/22 20:18	1
18O2 PFHxS	83		50 - 150	02/15/22 04:28	02/27/22 20:18	1
13C4 PFOS	88		50 - 150	02/15/22 04:28	02/27/22 20:18	1
d3-NMeFOSAA	91		50 - 150	02/15/22 04:28	02/27/22 20:18	1
d5-NEtFOSAA	89		50 - 150	02/15/22 04:28	02/27/22 20:18	1
13C3 HFPO-DA	84		50 - 150	02/15/22 04:28	02/27/22 20:18	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

**Client Sample ID: MW-8-20**

**Lab Sample ID: 320-8475 7-8**

Date Collected 02/ 07/ 22 15 :41

Matrix: Water

Date Received 02/ 12/ 22 10:54

**Method EPA 5 37(Mbd) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.56	ng/L		02/15/22 04:28	02/27/22 20:48	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		02/15/22 04:28	02/27/22 20:48	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		02/15/22 04:28	02/27/22 20:48	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		02/15/22 04:28	02/27/22 20:48	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		02/15/22 04:28	02/27/22 20:48	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		02/15/22 04:28	02/27/22 20:48	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		02/15/22 04:28	02/27/22 20:48	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		02/15/22 04:28	02/27/22 20:48	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		02/15/22 04:28	02/27/22 20:48	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		02/15/22 04:28	02/27/22 20:48	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.55	ng/L		02/15/22 04:28	02/27/22 20:48	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		02/15/22 04:28	02/27/22 20:48	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		02/15/22 04:28	02/27/22 20:48	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.3	ng/L		02/15/22 04:28	02/27/22 20:48	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		02/15/22 04:28	02/27/22 20:48	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		02/15/22 04:28	02/27/22 20:48	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		02/15/22 04:28	02/27/22 20:48	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		02/15/22 04:28	02/27/22 20:48	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	70		50 - 150	02/15/22 04:28	02/27/22 20:48	1
13C4 PFHpA	76		50 - 150	02/15/22 04:28	02/27/22 20:48	1
13C4 PFOA	74		50 - 150	02/15/22 04:28	02/27/22 20:48	1
13C5 PFNA	73		50 - 150	02/15/22 04:28	02/27/22 20:48	1
13C2 PFDA	79		50 - 150	02/15/22 04:28	02/27/22 20:48	1
13C2 PFUnA	70		50 - 150	02/15/22 04:28	02/27/22 20:48	1
13C2 PFDoA	75		50 - 150	02/15/22 04:28	02/27/22 20:48	1
13C2 PFTeDA	72		50 - 150	02/15/22 04:28	02/27/22 20:48	1
13C3 PFBS	67		50 - 150	02/15/22 04:28	02/27/22 20:48	1
18O2 PFHxS	75		50 - 150	02/15/22 04:28	02/27/22 20:48	1
13C4 PFOS	70		50 - 150	02/15/22 04:28	02/27/22 20:48	1
d3-NMeFOSAA	74		50 - 150	02/15/22 04:28	02/27/22 20:48	1
d5-NEtFOSAA	79		50 - 150	02/15/22 04:28	02/27/22 20:48	1
13C3 HFPO-DA	72		50 - 150	02/15/22 04:28	02/27/22 20:48	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

**Client Sample ID: MW-5-20**

**Lab Sample ID: 320-8475 7-9**

Date Collected 02/ 08/ 22 11:23

Matrix: Water

Date Received 02/ 12/ 22 10:54

**Method EPA 5 37(Mbd) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		02/15/22 04:28	02/27/22 20:58	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		02/15/22 04:28	02/27/22 20:58	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		02/15/22 04:28	02/27/22 20:58	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		02/15/22 04:28	02/27/22 20:58	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		02/15/22 04:28	02/27/22 20:58	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		02/15/22 04:28	02/27/22 20:58	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		02/15/22 04:28	02/27/22 20:58	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/15/22 04:28	02/27/22 20:58	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		02/15/22 04:28	02/27/22 20:58	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.22</b>	<b>J</b>	1.9	0.19	ng/L		02/15/22 04:28	02/27/22 20:58	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>1.1</b>	<b>J</b>	1.9	0.54	ng/L		02/15/22 04:28	02/27/22 20:58	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>2.9</b>		1.9	0.52	ng/L		02/15/22 04:28	02/27/22 20:58	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		02/15/22 04:28	02/27/22 20:58	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		02/15/22 04:28	02/27/22 20:58	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		02/15/22 04:28	02/27/22 20:58	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		02/15/22 04:28	02/27/22 20:58	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		02/15/22 04:28	02/27/22 20:58	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		02/15/22 04:28	02/27/22 20:58	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		50 - 150	02/15/22 04:28	02/27/22 20:58	1
13C4 PFHpA	91		50 - 150	02/15/22 04:28	02/27/22 20:58	1
13C4 PFOA	87		50 - 150	02/15/22 04:28	02/27/22 20:58	1
13C5 PFNA	87		50 - 150	02/15/22 04:28	02/27/22 20:58	1
13C2 PFDA	84		50 - 150	02/15/22 04:28	02/27/22 20:58	1
13C2 PFUnA	79		50 - 150	02/15/22 04:28	02/27/22 20:58	1
13C2 PFDoA	85		50 - 150	02/15/22 04:28	02/27/22 20:58	1
13C2 PFTeDA	84		50 - 150	02/15/22 04:28	02/27/22 20:58	1
13C3 PFBS	79		50 - 150	02/15/22 04:28	02/27/22 20:58	1
18O2 PFHxS	79		50 - 150	02/15/22 04:28	02/27/22 20:58	1
13C4 PFOS	87		50 - 150	02/15/22 04:28	02/27/22 20:58	1
d3-NMeFOSAA	84		50 - 150	02/15/22 04:28	02/27/22 20:58	1
d5-NEtFOSAA	85		50 - 150	02/15/22 04:28	02/27/22 20:58	1
13C3 HFPO-DA	85		50 - 150	02/15/22 04:28	02/27/22 20:58	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

**Client Sample ID: MW-2-20**

**Lab Sample ID: 320-8475 7-1 0**

Date Collected 02/ 09/ 22 10:45

Matrix: Water

Date Received 02/ 12/ 22 10:54

**Method EPA 5 37(Mbd) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	190		1.9	0.54	ng/L		02/15/22 04:28	02/27/22 21:08	1
Perfluoroheptanoic acid (PFHpA)	88		1.9	0.23	ng/L		02/15/22 04:28	02/27/22 21:08	1
Perfluorooctanoic acid (PFOA)	30		1.9	0.79	ng/L		02/15/22 04:28	02/27/22 21:08	1
Perfluorononanoic acid (PFNA)	4.9		1.9	0.25	ng/L		02/15/22 04:28	02/27/22 21:08	1
Perfluorodecanoic acid (PFDA)	0.65	J	1.9	0.29	ng/L		02/15/22 04:28	02/27/22 21:08	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		02/15/22 04:28	02/27/22 21:08	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		02/15/22 04:28	02/27/22 21:08	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/15/22 04:28	02/27/22 21:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		02/15/22 04:28	02/27/22 21:08	1
Perfluorobutanesulfonic acid (PFBS)	6.2		1.9	0.19	ng/L		02/15/22 04:28	02/27/22 21:08	1
Perfluorohexanesulfonic acid (PFHxS)	52		1.9	0.53	ng/L		02/15/22 04:28	02/27/22 21:08	1
Perfluorooctanesulfonic acid (PFOS)	260		1.9	0.50	ng/L		02/15/22 04:28	02/27/22 21:08	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		02/15/22 04:28	02/27/22 21:08	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		02/15/22 04:28	02/27/22 21:08	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		02/15/22 04:28	02/27/22 21:08	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		02/15/22 04:28	02/27/22 21:08	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		02/15/22 04:28	02/27/22 21:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		02/15/22 04:28	02/27/22 21:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		50 - 150	02/15/22 04:28	02/27/22 21:08	1
13C4 PFHpA	88		50 - 150	02/15/22 04:28	02/27/22 21:08	1
13C4 PFOA	90		50 - 150	02/15/22 04:28	02/27/22 21:08	1
13C5 PFNA	88		50 - 150	02/15/22 04:28	02/27/22 21:08	1
13C2 PFDA	82		50 - 150	02/15/22 04:28	02/27/22 21:08	1
13C2 PFUnA	89		50 - 150	02/15/22 04:28	02/27/22 21:08	1
13C2 PFDoA	90		50 - 150	02/15/22 04:28	02/27/22 21:08	1
13C2 PFTeDA	84		50 - 150	02/15/22 04:28	02/27/22 21:08	1
13C3 PFBS	92		50 - 150	02/15/22 04:28	02/27/22 21:08	1
18O2 PFHxS	85		50 - 150	02/15/22 04:28	02/27/22 21:08	1
13C4 PFOS	88		50 - 150	02/15/22 04:28	02/27/22 21:08	1
d3-NMeFOSAA	91		50 - 150	02/15/22 04:28	02/27/22 21:08	1
d5-NEtFOSAA	93		50 - 150	02/15/22 04:28	02/27/22 21:08	1
13C3 HFPO-DA	84		50 - 150	02/15/22 04:28	02/27/22 21:08	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

**Client Sample ID: MW-102-30**

**Lab Sample ID: 320-8475 7-11**

**Date Collected 02/ 09/ 22 09 :55**

**Matrix: Water**

**Date Received 02/ 12/ 22 10:54**

**Method EPA 5 37(Mbd) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.57	ng/L		02/15/22 04:28	02/27/22 21:18	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		02/15/22 04:28	02/27/22 21:18	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.83	ng/L		02/15/22 04:28	02/27/22 21:18	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		02/15/22 04:28	02/27/22 21:18	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		02/15/22 04:28	02/27/22 21:18	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		02/15/22 04:28	02/27/22 21:18	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.54	ng/L		02/15/22 04:28	02/27/22 21:18	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		02/15/22 04:28	02/27/22 21:18	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		02/15/22 04:28	02/27/22 21:18	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.78</b>	<b>J</b>	1.9	0.19	ng/L		02/15/22 04:28	02/27/22 21:18	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.56	ng/L		02/15/22 04:28	02/27/22 21:18	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.53	ng/L		02/15/22 04:28	02/27/22 21:18	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		02/15/22 04:28	02/27/22 21:18	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		02/15/22 04:28	02/27/22 21:18	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		02/15/22 04:28	02/27/22 21:18	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		02/15/22 04:28	02/27/22 21:18	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		02/15/22 04:28	02/27/22 21:18	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		02/15/22 04:28	02/27/22 21:18	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	79		50 - 150	02/15/22 04:28	02/27/22 21:18	1
13C4 PFHpA	84		50 - 150	02/15/22 04:28	02/27/22 21:18	1
13C4 PFOA	84		50 - 150	02/15/22 04:28	02/27/22 21:18	1
13C5 PFNA	81		50 - 150	02/15/22 04:28	02/27/22 21:18	1
13C2 PFDA	82		50 - 150	02/15/22 04:28	02/27/22 21:18	1
13C2 PFUnA	73		50 - 150	02/15/22 04:28	02/27/22 21:18	1
13C2 PFDoA	79		50 - 150	02/15/22 04:28	02/27/22 21:18	1
13C2 PFTeDA	71		50 - 150	02/15/22 04:28	02/27/22 21:18	1
13C3 PFBS	83		50 - 150	02/15/22 04:28	02/27/22 21:18	1
18O2 PFHxS	78		50 - 150	02/15/22 04:28	02/27/22 21:18	1
13C4 PFOS	84		50 - 150	02/15/22 04:28	02/27/22 21:18	1
d3-NMeFOSAA	76		50 - 150	02/15/22 04:28	02/27/22 21:18	1
d5-NEtFOSAA	78		50 - 150	02/15/22 04:28	02/27/22 21:18	1
13C3 HFPO-DA	76		50 - 150	02/15/22 04:28	02/27/22 21:18	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

**Client Sample ID: MW-6-20**

**Lab Sample ID: 320-8475 7-1 2**

Date Collected 02/ 09/ 22 16:20

Matrix: Water

Date Received 02/ 12/ 22 10:54

**Method EPA 5 37(Mbd) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		02/15/22 04:28	02/27/22 21:29	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		02/15/22 04:28	02/27/22 21:29	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		02/15/22 04:28	02/27/22 21:29	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		02/15/22 04:28	02/27/22 21:29	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		02/15/22 04:28	02/27/22 21:29	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		02/15/22 04:28	02/27/22 21:29	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		02/15/22 04:28	02/27/22 21:29	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/15/22 04:28	02/27/22 21:29	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		02/15/22 04:28	02/27/22 21:29	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		02/15/22 04:28	02/27/22 21:29	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.90</b>	<b>J I</b>	1.9	0.54	ng/L		02/15/22 04:28	02/27/22 21:29	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		02/15/22 04:28	02/27/22 21:29	1
N-methylperfluorooctanesulfonamide acid (NMeFOSAA)	ND		4.7	1.1	ng/L		02/15/22 04:28	02/27/22 21:29	1
N-ethylperfluorooctanesulfonamide acid (NEtFOSAA)	ND		4.7	1.2	ng/L		02/15/22 04:28	02/27/22 21:29	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		02/15/22 04:28	02/27/22 21:29	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		02/15/22 04:28	02/27/22 21:29	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		02/15/22 04:28	02/27/22 21:29	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		02/15/22 04:28	02/27/22 21:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	90		50 - 150	02/15/22 04:28	02/27/22 21:29	1
13C4 PFHpA	99		50 - 150	02/15/22 04:28	02/27/22 21:29	1
13C4 PFOA	95		50 - 150	02/15/22 04:28	02/27/22 21:29	1
13C5 PFNA	99		50 - 150	02/15/22 04:28	02/27/22 21:29	1
13C2 PFDA	90		50 - 150	02/15/22 04:28	02/27/22 21:29	1
13C2 PFUnA	83		50 - 150	02/15/22 04:28	02/27/22 21:29	1
13C2 PFDoA	90		50 - 150	02/15/22 04:28	02/27/22 21:29	1
13C2 PFTeDA	84		50 - 150	02/15/22 04:28	02/27/22 21:29	1
13C3 PFBS	92		50 - 150	02/15/22 04:28	02/27/22 21:29	1
18O2 PFHxS	88		50 - 150	02/15/22 04:28	02/27/22 21:29	1
13C4 PFOS	92		50 - 150	02/15/22 04:28	02/27/22 21:29	1
d3-NMeFOSAA	92		50 - 150	02/15/22 04:28	02/27/22 21:29	1
d5-NEtFOSAA	100		50 - 150	02/15/22 04:28	02/27/22 21:29	1
13C3 HFPO-DA	91		50 - 150	02/15/22 04:28	02/27/22 21:29	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

**Client Sample ID: GAC**

**Lab Sample ID: 320-8475 7-1 3**

**Date Collected 02/ 1 0/ 22 16:30**

**Matrix: Water**

**Date Received 02/ 12/ 22 10:54**

**Method EPA 5 37(Mbd) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		02/15/22 04:28	02/27/22 21:39	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		02/15/22 04:28	02/27/22 21:39	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		02/15/22 04:28	02/27/22 21:39	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		02/15/22 04:28	02/27/22 21:39	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		02/15/22 04:28	02/27/22 21:39	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		02/15/22 04:28	02/27/22 21:39	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		02/15/22 04:28	02/27/22 21:39	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/15/22 04:28	02/27/22 21:39	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		02/15/22 04:28	02/27/22 21:39	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		02/15/22 04:28	02/27/22 21:39	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		02/15/22 04:28	02/27/22 21:39	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		02/15/22 04:28	02/27/22 21:39	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		02/15/22 04:28	02/27/22 21:39	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		02/15/22 04:28	02/27/22 21:39	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		02/15/22 04:28	02/27/22 21:39	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		02/15/22 04:28	02/27/22 21:39	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		02/15/22 04:28	02/27/22 21:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		02/15/22 04:28	02/27/22 21:39	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	85		50 - 150	02/15/22 04:28	02/27/22 21:39	1
13C4 PFHpA	88		50 - 150	02/15/22 04:28	02/27/22 21:39	1
13C4 PFOA	84		50 - 150	02/15/22 04:28	02/27/22 21:39	1
13C5 PFNA	88		50 - 150	02/15/22 04:28	02/27/22 21:39	1
13C2 PFDA	80		50 - 150	02/15/22 04:28	02/27/22 21:39	1
13C2 PFUnA	80		50 - 150	02/15/22 04:28	02/27/22 21:39	1
13C2 PFDoA	85		50 - 150	02/15/22 04:28	02/27/22 21:39	1
13C2 PFTeDA	85		50 - 150	02/15/22 04:28	02/27/22 21:39	1
13C3 PFBS	81		50 - 150	02/15/22 04:28	02/27/22 21:39	1
18O2 PFHxS	84		50 - 150	02/15/22 04:28	02/27/22 21:39	1
13C4 PFOS	86		50 - 150	02/15/22 04:28	02/27/22 21:39	1
d3-NMeFOSAA	85		50 - 150	02/15/22 04:28	02/27/22 21:39	1
d5-NEtFOSAA	91		50 - 150	02/15/22 04:28	02/27/22 21:39	1
13C3 HFPO-DA	80		50 - 150	02/15/22 04:28	02/27/22 21:39	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

**Client Sample ID: MW-9-30**

**Lab Sample ID: 320-8475 7-1 4**

Date Collected 02/ 1 0/ 22 10:06

Matrix: Water

Date Received 02/ 12/ 22 10:54

**Method EPA 5 37(Mbd) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	6.4		1.9	0.55	ng/L		02/15/22 04:28	02/27/22 21:49	1
Perfluoroheptanoic acid (PFHpA)	2.8		1.9	0.24	ng/L		02/15/22 04:28	02/27/22 21:49	1
Perfluorooctanoic acid (PFOA)	1.5	J	1.9	0.81	ng/L		02/15/22 04:28	02/27/22 21:49	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		02/15/22 04:28	02/27/22 21:49	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		02/15/22 04:28	02/27/22 21:49	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		02/15/22 04:28	02/27/22 21:49	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		02/15/22 04:28	02/27/22 21:49	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/15/22 04:28	02/27/22 21:49	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		02/15/22 04:28	02/27/22 21:49	1
Perfluorobutanesulfonic acid (PFBS)	0.75	J I	1.9	0.19	ng/L		02/15/22 04:28	02/27/22 21:49	1
Perfluorohexanesulfonic acid (PFHxS)	12		1.9	0.54	ng/L		02/15/22 04:28	02/27/22 21:49	1
Perfluorooctanesulfonic acid (PFOS)	45		1.9	0.51	ng/L		02/15/22 04:28	02/27/22 21:49	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		02/15/22 04:28	02/27/22 21:49	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		02/15/22 04:28	02/27/22 21:49	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		02/15/22 04:28	02/27/22 21:49	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		02/15/22 04:28	02/27/22 21:49	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		02/15/22 04:28	02/27/22 21:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		02/15/22 04:28	02/27/22 21:49	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	81		50 - 150	02/15/22 04:28	02/27/22 21:49	1
13C4 PFHpA	89		50 - 150	02/15/22 04:28	02/27/22 21:49	1
13C4 PFOA	88		50 - 150	02/15/22 04:28	02/27/22 21:49	1
13C5 PFNA	87		50 - 150	02/15/22 04:28	02/27/22 21:49	1
13C2 PFDA	85		50 - 150	02/15/22 04:28	02/27/22 21:49	1
13C2 PFUnA	84		50 - 150	02/15/22 04:28	02/27/22 21:49	1
13C2 PFDoA	73		50 - 150	02/15/22 04:28	02/27/22 21:49	1
13C2 PFTeDA	73		50 - 150	02/15/22 04:28	02/27/22 21:49	1
13C3 PFBS	82		50 - 150	02/15/22 04:28	02/27/22 21:49	1
18O2 PFHxS	88		50 - 150	02/15/22 04:28	02/27/22 21:49	1
13C4 PFOS	84		50 - 150	02/15/22 04:28	02/27/22 21:49	1
d3-NMeFOSAA	75		50 - 150	02/15/22 04:28	02/27/22 21:49	1
d5-NEtFOSAA	79		50 - 150	02/15/22 04:28	02/27/22 21:49	1
13C3 HFPO-DA	84		50 - 150	02/15/22 04:28	02/27/22 21:49	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

**Client Sample ID: MW-11 -1 5**

**Lab Sample ID: 320-8475 7-1 5**

Date Collected 02/ 1 0/ 22 13:54

Matrix: Water

Date Received 02/ 12/ 22 10:54

**Method EPA 5 37(Mbd) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	14		1.9	0.55	ng/L		02/15/22 04:28	02/27/22 21:59	1
Perfluoroheptanoic acid (PFHpA)	8.7		1.9	0.24	ng/L		02/15/22 04:28	02/27/22 21:59	1
Perfluorooctanoic acid (PFOA)	12		1.9	0.81	ng/L		02/15/22 04:28	02/27/22 21:59	1
Perfluorononanoic acid (PFNA)	0.81	J	1.9	0.26	ng/L		02/15/22 04:28	02/27/22 21:59	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		02/15/22 04:28	02/27/22 21:59	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		02/15/22 04:28	02/27/22 21:59	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		02/15/22 04:28	02/27/22 21:59	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/15/22 04:28	02/27/22 21:59	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		02/15/22 04:28	02/27/22 21:59	1
Perfluorobutanesulfonic acid (PFBS)	1.5	J	1.9	0.19	ng/L		02/15/22 04:28	02/27/22 21:59	1
Perfluorohexanesulfonic acid (PFHxS)	51		1.9	0.54	ng/L		02/15/22 04:28	02/27/22 21:59	1
Perfluorooctanesulfonic acid (PFOS)	130		1.9	0.51	ng/L		02/15/22 04:28	02/27/22 21:59	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		02/15/22 04:28	02/27/22 21:59	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		02/15/22 04:28	02/27/22 21:59	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		02/15/22 04:28	02/27/22 21:59	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		02/15/22 04:28	02/27/22 21:59	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		02/15/22 04:28	02/27/22 21:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		02/15/22 04:28	02/27/22 21:59	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	78		50 - 150	02/15/22 04:28	02/27/22 21:59	1
13C4 PFHpA	83		50 - 150	02/15/22 04:28	02/27/22 21:59	1
13C4 PFOA	86		50 - 150	02/15/22 04:28	02/27/22 21:59	1
13C5 PFNA	80		50 - 150	02/15/22 04:28	02/27/22 21:59	1
13C2 PFDA	79		50 - 150	02/15/22 04:28	02/27/22 21:59	1
13C2 PFUnA	79		50 - 150	02/15/22 04:28	02/27/22 21:59	1
13C2 PFDoA	75		50 - 150	02/15/22 04:28	02/27/22 21:59	1
13C2 PFTeDA	80		50 - 150	02/15/22 04:28	02/27/22 21:59	1
13C3 PFBS	84		50 - 150	02/15/22 04:28	02/27/22 21:59	1
18O2 PFHxS	76		50 - 150	02/15/22 04:28	02/27/22 21:59	1
13C4 PFOS	80		50 - 150	02/15/22 04:28	02/27/22 21:59	1
d3-NMeFOSAA	79		50 - 150	02/15/22 04:28	02/27/22 21:59	1
d5-NEtFOSAA	80		50 - 150	02/15/22 04:28	02/27/22 21:59	1
13C3 HFPO-DA	75		50 - 150	02/15/22 04:28	02/27/22 21:59	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

**Client Sample ID: EB-11 -1 5**

**Lab Sample ID: 320-8475 7-1 6**

**Date Collected 02/ 1 0/ 22 15 :00**

**Matrix: Water**

**Date Received 02/ 12/ 22 10:54**

**Method EPA 5 37(Mbd) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		02/15/22 04:28	02/27/22 22:09	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		02/15/22 04:28	02/27/22 22:09	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		02/15/22 04:28	02/27/22 22:09	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		02/15/22 04:28	02/27/22 22:09	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		02/15/22 04:28	02/27/22 22:09	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		02/15/22 04:28	02/27/22 22:09	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		02/15/22 04:28	02/27/22 22:09	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		02/15/22 04:28	02/27/22 22:09	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		02/15/22 04:28	02/27/22 22:09	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		02/15/22 04:28	02/27/22 22:09	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		02/15/22 04:28	02/27/22 22:09	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		02/15/22 04:28	02/27/22 22:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		02/15/22 04:28	02/27/22 22:09	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		02/15/22 04:28	02/27/22 22:09	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		02/15/22 04:28	02/27/22 22:09	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		02/15/22 04:28	02/27/22 22:09	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		02/15/22 04:28	02/27/22 22:09	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		02/15/22 04:28	02/27/22 22:09	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		50 - 150	02/15/22 04:28	02/27/22 22:09	1
13C4 PFHpA	93		50 - 150	02/15/22 04:28	02/27/22 22:09	1
13C4 PFOA	91		50 - 150	02/15/22 04:28	02/27/22 22:09	1
13C5 PFNA	98		50 - 150	02/15/22 04:28	02/27/22 22:09	1
13C2 PFDA	93		50 - 150	02/15/22 04:28	02/27/22 22:09	1
13C2 PFUnA	89		50 - 150	02/15/22 04:28	02/27/22 22:09	1
13C2 PFDoA	94		50 - 150	02/15/22 04:28	02/27/22 22:09	1
13C2 PFTeDA	87		50 - 150	02/15/22 04:28	02/27/22 22:09	1
13C3 PFBS	93		50 - 150	02/15/22 04:28	02/27/22 22:09	1
18O2 PFHxS	91		50 - 150	02/15/22 04:28	02/27/22 22:09	1
13C4 PFOS	92		50 - 150	02/15/22 04:28	02/27/22 22:09	1
d3-NMeFOSAA	88		50 - 150	02/15/22 04:28	02/27/22 22:09	1
d5-NEtFOSAA	104		50 - 150	02/15/22 04:28	02/27/22 22:09	1
13C3 HFPO-DA	91		50 - 150	02/15/22 04:28	02/27/22 22:09	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

**Client Sample ID: MW-111 -15**

**Lab Sample ID: 320-8475 7-1 7**

Date Collected 02/ 1 0/ 22 13:44

Matrix: Water

Date Received 02/ 12/ 22 10:54

**Method EPA 5 37(Mbd) - PFAS for QSM5. 3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	12		1.9	0.55	ng/L		02/15/22 04:28	02/27/22 22:19	1
Perfluoroheptanoic acid (PFHpA)	8.5		1.9	0.24	ng/L		02/15/22 04:28	02/27/22 22:19	1
Perfluorooctanoic acid (PFOA)	11		1.9	0.81	ng/L		02/15/22 04:28	02/27/22 22:19	1
Perfluorononanoic acid (PFNA)	0.65	J	1.9	0.26	ng/L		02/15/22 04:28	02/27/22 22:19	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		02/15/22 04:28	02/27/22 22:19	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		02/15/22 04:28	02/27/22 22:19	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		02/15/22 04:28	02/27/22 22:19	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/15/22 04:28	02/27/22 22:19	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		02/15/22 04:28	02/27/22 22:19	1
Perfluorobutanesulfonic acid (PFBS)	1.4	J	1.9	0.19	ng/L		02/15/22 04:28	02/27/22 22:19	1
Perfluorohexanesulfonic acid (PFHxS)	52		1.9	0.54	ng/L		02/15/22 04:28	02/27/22 22:19	1
Perfluorooctanesulfonic acid (PFOS)	120		1.9	0.51	ng/L		02/15/22 04:28	02/27/22 22:19	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		02/15/22 04:28	02/27/22 22:19	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		02/15/22 04:28	02/27/22 22:19	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		02/15/22 04:28	02/27/22 22:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		02/15/22 04:28	02/27/22 22:19	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		02/15/22 04:28	02/27/22 22:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		02/15/22 04:28	02/27/22 22:19	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		50 - 150	02/15/22 04:28	02/27/22 22:19	1
13C4 PFHpA	94		50 - 150	02/15/22 04:28	02/27/22 22:19	1
13C4 PFOA	96		50 - 150	02/15/22 04:28	02/27/22 22:19	1
13C5 PFNA	96		50 - 150	02/15/22 04:28	02/27/22 22:19	1
13C2 PFDA	102		50 - 150	02/15/22 04:28	02/27/22 22:19	1
13C2 PFUnA	91		50 - 150	02/15/22 04:28	02/27/22 22:19	1
13C2 PFDoA	85		50 - 150	02/15/22 04:28	02/27/22 22:19	1
13C2 PFTeDA	86		50 - 150	02/15/22 04:28	02/27/22 22:19	1
13C3 PFBS	92		50 - 150	02/15/22 04:28	02/27/22 22:19	1
18O2 PFHxS	92		50 - 150	02/15/22 04:28	02/27/22 22:19	1
13C4 PFOS	94		50 - 150	02/15/22 04:28	02/27/22 22:19	1
d3-NMeFOSAA	96		50 - 150	02/15/22 04:28	02/27/22 22:19	1
d5-NEtFOSAA	100		50 - 150	02/15/22 04:28	02/27/22 22:19	1
13C3 HFPO-DA	88		50 - 150	02/15/22 04:28	02/27/22 22:19	1

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: Gustavus MW

Job ID: 320-84757-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDaA (50-150)	PFTDA (50-150)
320-84757-1	MW-108-20	77	80	78	77	72	71	74	73
320-84757-2	MW-1-40	85	89	91	83	84	81	86	82
320-84757-3	MW-2-30	88	90	92	89	86	87	84	85
320-84757-4	MW-1-15	79	91	85	79	81	83	81	82
320-84757-5	MW-10-20	85	86	86	87	87	85	85	85
320-84757-6	MW-105-20	87	86	88	83	79	83	87	81
320-84757-7	MW-3-40	83	92	98	89	84	85	81	83
320-84757-8	MW-8-20	70	76	74	73	79	70	75	72
320-84757-9	MW-5-20	86	91	87	87	84	79	85	84
320-84757-10	MW-2-20	86	88	90	88	82	89	90	84
320-84757-11	MW-102-30	79	84	84	81	82	73	79	71
320-84757-12	MW-6-20	90	99	95	99	90	83	90	84
320-84757-13	GAC	85	88	84	88	80	80	85	85
320-84757-14	MW-9-30	81	89	88	87	85	84	73	73
320-84757-15	MW-11-15	78	83	86	80	79	79	75	80
320-84757-16	EB-11-15	95	93	91	98	93	89	94	87
320-84757-17	MW-111-15	94	94	96	96	102	91	85	86
LCS 320-565791/2-A	Lab Control Sample	75	83	81	79	79	77	76	74
LCSD 320-565791/3-A	Lab Control Sample Dup	81	89	81	77	84	76	84	76
MB 320-565791/1-A	Method Blank	72	75	76	71	68	70	79	70

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-84757-1	MW-108-20	78	74	76	74	85	75
320-84757-2	MW-1-40	86	80	82	86	93	85
320-84757-3	MW-2-30	84	84	85	85	91	87
320-84757-4	MW-1-15	86	82	80	85	91	83
320-84757-5	MW-10-20	86	81	86	88	91	79
320-84757-6	MW-105-20	88	85	89	82	88	79
320-84757-7	MW-3-40	85	83	88	91	89	84
320-84757-8	MW-8-20	67	75	70	74	79	72
320-84757-9	MW-5-20	79	79	87	84	85	85
320-84757-10	MW-2-20	92	85	88	91	93	84
320-84757-11	MW-102-30	83	78	84	76	78	76
320-84757-12	MW-6-20	92	88	92	92	100	91
320-84757-13	GAC	81	84	86	85	91	80
320-84757-14	MW-9-30	82	88	84	75	79	84
320-84757-15	MW-11-15	84	76	80	79	80	75
320-84757-16	EB-11-15	93	91	92	88	104	91
320-84757-17	MW-111-15	92	92	94	96	100	88
LCS 320-565791/2-A	Lab Control Sample	86	76	79	83	81	75
LCSD 320-565791/3-A	Lab Control Sample Dup	92	82	88	91	84	81
MB 320-565791/1-A	Method Blank	77	62	73	77	82	71

**Surrogate Legend**

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

PFUnA = 13C2 PFUnA  
PFDoA = 13C2 PFDoA  
PFTDA = 13C2 PFTeDA  
C3PFBS = 13C3 PFBS  
PFHxS = 18O2 PFHxS  
PFOS = 13C4 PFOS  
d3NMFOS = d3-NMeFOSAA  
d5NEFOS = d5-NEtFOSAA  
HFPODA = 13C3 HFPO-DA

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-565791/1-A**  
**Matrix: Water**  
**Analysis Batch: 568856**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 565791**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		02/15/22 04:28	02/27/22 18:47	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		02/15/22 04:28	02/27/22 18:47	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		02/15/22 04:28	02/27/22 18:47	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		02/15/22 04:28	02/27/22 18:47	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		02/15/22 04:28	02/27/22 18:47	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		02/15/22 04:28	02/27/22 18:47	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		02/15/22 04:28	02/27/22 18:47	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		02/15/22 04:28	02/27/22 18:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		02/15/22 04:28	02/27/22 18:47	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		02/15/22 04:28	02/27/22 18:47	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		02/15/22 04:28	02/27/22 18:47	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		02/15/22 04:28	02/27/22 18:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		02/15/22 04:28	02/27/22 18:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		02/15/22 04:28	02/27/22 18:47	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		02/15/22 04:28	02/27/22 18:47	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		02/15/22 04:28	02/27/22 18:47	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		02/15/22 04:28	02/27/22 18:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		02/15/22 04:28	02/27/22 18:47	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	72		50 - 150	02/15/22 04:28	02/27/22 18:47	1
13C4 PFHpA	75		50 - 150	02/15/22 04:28	02/27/22 18:47	1
13C4 PFOA	76		50 - 150	02/15/22 04:28	02/27/22 18:47	1
13C5 PFNA	71		50 - 150	02/15/22 04:28	02/27/22 18:47	1
13C2 PFDA	68		50 - 150	02/15/22 04:28	02/27/22 18:47	1
13C2 PFUnA	70		50 - 150	02/15/22 04:28	02/27/22 18:47	1
13C2 PFDoA	79		50 - 150	02/15/22 04:28	02/27/22 18:47	1
13C2 PFTeDA	70		50 - 150	02/15/22 04:28	02/27/22 18:47	1
13C3 PFBS	77		50 - 150	02/15/22 04:28	02/27/22 18:47	1
18O2 PFHxS	62		50 - 150	02/15/22 04:28	02/27/22 18:47	1
13C4 PFOS	73		50 - 150	02/15/22 04:28	02/27/22 18:47	1
d3-NMeFOSAA	77		50 - 150	02/15/22 04:28	02/27/22 18:47	1
d5-NEtFOSAA	82		50 - 150	02/15/22 04:28	02/27/22 18:47	1
13C3 HFPO-DA	71		50 - 150	02/15/22 04:28	02/27/22 18:47	1

**Lab Sample ID: LCS 320-565791/2-A**  
**Matrix: Water**  
**Analysis Batch: 568856**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 565791**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	40.0	41.5		ng/L		104	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	39.8		ng/L		100	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	40.0		ng/L		100	71 - 133
Perfluorononanoic acid (PFNA)	40.0	38.5		ng/L		96	69 - 130

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-565791/2-A**  
**Matrix: Water**  
**Analysis Batch: 568856**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 565791**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	38.3		ng/L		96	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	40.9		ng/L		102	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	41.2		ng/L		103	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	43.4		ng/L		109	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	44.6		ng/L		111	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	30.7		ng/L		87	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	38.3		ng/L		105	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	33.5		ng/L		90	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	36.1		ng/L		90	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.0		ng/L		97	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	35.8		ng/L		96	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.8		ng/L		100	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	39.7		ng/L		105	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	39.5		ng/L		105	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	75		50 - 150
13C4 PFHpA	83		50 - 150
13C4 PFOA	81		50 - 150
13C5 PFNA	79		50 - 150
13C2 PFDA	79		50 - 150
13C2 PFUnA	77		50 - 150
13C2 PFDoA	76		50 - 150
13C2 PFTeDA	74		50 - 150
13C3 PFBS	86		50 - 150
18O2 PFHxS	76		50 - 150
13C4 PFOS	79		50 - 150
d3-NMeFOSAA	83		50 - 150
d5-NEtFOSAA	81		50 - 150
13C3 HFPO-DA	75		50 - 150

**Lab Sample ID: LCSD 320-565791/3-A**  
**Matrix: Water**  
**Analysis Batch: 568856**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 565791**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.	
							Limits	RPD
Perfluorohexanoic acid (PFHxA)	40.0	39.4		ng/L		99	72 - 129	5 30
Perfluoroheptanoic acid (PFHpA)	40.0	38.9		ng/L		97	72 - 130	2 30
Perfluorooctanoic acid (PFOA)	40.0	37.5		ng/L		94	71 - 133	6 30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-565791/3-A**  
**Matrix: Water**  
**Analysis Batch: 568856**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 565791**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	42.4		ng/L		106	69 - 130	10	30
Perfluorodecanoic acid (PFDA)	40.0	37.0		ng/L		92	71 - 129	3	30
Perfluoroundecanoic acid (PFUnA)	40.0	42.0		ng/L		105	69 - 133	3	30
Perfluorododecanoic acid (PFDoA)	40.0	38.7		ng/L		97	72 - 134	6	30
Perfluorotridecanoic acid (PFTriA)	40.0	40.1		ng/L		100	65 - 144	8	30
Perfluorotetradecanoic acid (PFTeA)	40.0	42.4		ng/L		106	71 - 132	5	30
Perfluorobutanesulfonic acid (PFBS)	35.4	29.1		ng/L		82	72 - 130	5	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.3		ng/L		100	68 - 131	5	30
Perfluorooctanesulfonic acid (PFOS)	37.1	32.0		ng/L		86	65 - 140	5	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	37.9		ng/L		95	65 - 136	5	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.7		ng/L		99	61 - 135	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	32.0		ng/L		86	77 - 137	11	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.2		ng/L		101	72 - 132	1	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	35.2		ng/L		93	76 - 136	12	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	34.9		ng/L		93	81 - 141	12	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	81		50 - 150
13C4 PFHpA	89		50 - 150
13C4 PFOA	81		50 - 150
13C5 PFNA	77		50 - 150
13C2 PFDA	84		50 - 150
13C2 PFUnA	76		50 - 150
13C2 PFDoA	84		50 - 150
13C2 PFTeDA	76		50 - 150
13C3 PFBS	92		50 - 150
18O2 PFHxS	82		50 - 150
13C4 PFOS	88		50 - 150
d3-NMeFOSAA	91		50 - 150
d5-NEtFOSAA	84		50 - 150
13C3 HFPO-DA	81		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
 Project/Site: Gustavus MW

Job ID: 320-84757-1

## LCMS

### Prep Batch: 565791

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-84757-1	MW-108-20	Total/NA	Water	3535	
320-84757-2	MW-1-40	Total/NA	Water	3535	
320-84757-3	MW-2-30	Total/NA	Water	3535	
320-84757-4	MW-1-15	Total/NA	Water	3535	
320-84757-5	MW-10-20	Total/NA	Water	3535	
320-84757-6	MW-105-20	Total/NA	Water	3535	
320-84757-7	MW-3-40	Total/NA	Water	3535	
320-84757-8	MW-8-20	Total/NA	Water	3535	
320-84757-9	MW-5-20	Total/NA	Water	3535	
320-84757-10	MW-2-20	Total/NA	Water	3535	
320-84757-11	MW-102-30	Total/NA	Water	3535	
320-84757-12	MW-6-20	Total/NA	Water	3535	
320-84757-13	GAC	Total/NA	Water	3535	
320-84757-14	MW-9-30	Total/NA	Water	3535	
320-84757-15	MW-11-15	Total/NA	Water	3535	
320-84757-16	EB-11-15	Total/NA	Water	3535	
320-84757-17	MW-111-15	Total/NA	Water	3535	
MB 320-565791/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-565791/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-565791/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 568856

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-84757-1	MW-108-20	Total/NA	Water	EPA 537(Mod)	565791
320-84757-2	MW-1-40	Total/NA	Water	EPA 537(Mod)	565791
320-84757-3	MW-2-30	Total/NA	Water	EPA 537(Mod)	565791
320-84757-4	MW-1-15	Total/NA	Water	EPA 537(Mod)	565791
320-84757-5	MW-10-20	Total/NA	Water	EPA 537(Mod)	565791
320-84757-6	MW-105-20	Total/NA	Water	EPA 537(Mod)	565791
320-84757-7	MW-3-40	Total/NA	Water	EPA 537(Mod)	565791
320-84757-8	MW-8-20	Total/NA	Water	EPA 537(Mod)	565791
320-84757-9	MW-5-20	Total/NA	Water	EPA 537(Mod)	565791
320-84757-10	MW-2-20	Total/NA	Water	EPA 537(Mod)	565791
320-84757-11	MW-102-30	Total/NA	Water	EPA 537(Mod)	565791
320-84757-12	MW-6-20	Total/NA	Water	EPA 537(Mod)	565791
320-84757-13	GAC	Total/NA	Water	EPA 537(Mod)	565791
320-84757-14	MW-9-30	Total/NA	Water	EPA 537(Mod)	565791
320-84757-15	MW-11-15	Total/NA	Water	EPA 537(Mod)	565791
320-84757-16	EB-11-15	Total/NA	Water	EPA 537(Mod)	565791
320-84757-17	MW-111-15	Total/NA	Water	EPA 537(Mod)	565791
MB 320-565791/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	565791
LCS 320-565791/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	565791
LCSD 320-565791/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	565791

# Lab Chronicle

Client: Shannon & Wilson, Inc  
 Project/Site: Gustavus MW

Job ID: 320-84757-1

**Client Sample ID: MW-108-20**

**Date Collected 02/ 07/ 22 15:31**

**Date Received 02/ 12/ 22 10:54**

**Lab Sample ID: 320-84757-1**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.3 mL	10.0 mL	565791	02/15/22 04:28	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568856	02/27/22 19:17	D1R	TAL SAC

**Client Sample ID: MW-1-40**

**Date Collected 02/ 08/ 22 13:40**

**Date Received 02/ 12/ 22 10:54**

**Lab Sample ID: 320-84757-2**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			258.6 mL	10.0 mL	565791	02/15/22 04:28	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568856	02/27/22 19:27	D1R	TAL SAC

**Client Sample ID: MW-2-30**

**Date Collected 02/ 09/ 22 10:05**

**Date Received 02/ 12/ 22 10:54**

**Lab Sample ID: 320-84757-3**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			266.5 mL	10.0 mL	565791	02/15/22 04:28	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568856	02/27/22 19:37	D1R	TAL SAC

**Client Sample ID: MW-1-15**

**Date Collected 02/ 08/ 22 14:26**

**Date Received 02/ 12/ 22 10:54**

**Lab Sample ID: 320-84757-4**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268.9 mL	10.0 mL	565791	02/15/22 04:28	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568856	02/27/22 19:48	D1R	TAL SAC

**Client Sample ID: MW-10-20**

**Date Collected 02/ 08/ 22 10:19**

**Date Received 02/ 12/ 22 10:54**

**Lab Sample ID: 320-84757-5**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.9 mL	10.0 mL	565791	02/15/22 04:28	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568856	02/27/22 19:58	D1R	TAL SAC

**Client Sample ID: MW-105-20**

**Date Collected 02/ 08/ 22 11:13**

**Date Received 02/ 12/ 22 10:54**

**Lab Sample ID: 320-84757-6**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			260.3 mL	10.0 mL	565791	02/15/22 04:28	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568856	02/27/22 20:08	D1R	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

**Client Sample ID: MW-3-40**

**Lab Sample ID: 320-84757-7**

Date Collected 02/ 09/ 22 14:51

Matrix: Water

Date Received 02/ 12/ 22 10:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			263 mL	10.0 mL	565791	02/15/22 04:28	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568856	02/27/22 20:18	D1R	TAL SAC

**Client Sample ID: MW-8-20**

**Lab Sample ID: 320-84757-8**

Date Collected 02/ 07/ 22 15:41

Matrix: Water

Date Received 02/ 12/ 22 10:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			258.1 mL	10.0 mL	565791	02/15/22 04:28	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568856	02/27/22 20:48	D1R	TAL SAC

**Client Sample ID: MW-5-20**

**Lab Sample ID: 320-84757-9**

Date Collected 02/ 08/ 22 11:23

Matrix: Water

Date Received 02/ 12/ 22 10:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			261.6 mL	10.0 mL	565791	02/15/22 04:28	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568856	02/27/22 20:58	D1R	TAL SAC

**Client Sample ID: MW-2-20**

**Lab Sample ID: 320-84757-10**

Date Collected 02/ 09/ 22 10:45

Matrix: Water

Date Received 02/ 12/ 22 10:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.7 mL	10.0 mL	565791	02/15/22 04:28	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568856	02/27/22 21:08	D1R	TAL SAC

**Client Sample ID: MW-102-30**

**Lab Sample ID: 320-84757-11**

Date Collected 02/ 09/ 22 09:55

Matrix: Water

Date Received 02/ 12/ 22 10:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			256.5 mL	10.0 mL	565791	02/15/22 04:28	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568856	02/27/22 21:18	D1R	TAL SAC

**Client Sample ID: MW-6-20**

**Lab Sample ID: 320-84757-12**

Date Collected 02/ 09/ 22 16:20

Matrix: Water

Date Received 02/ 12/ 22 10:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265.5 mL	10.0 mL	565791	02/15/22 04:28	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568856	02/27/22 21:29	D1R	TAL SAC

Eurofins Sacramento

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

## Client Sample ID: GAC

Date Collected 02/ 10/ 22 16:30

Date Received 02/ 12/ 22 10:54

## Lab Sample ID: 320-84757-13

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.9 mL	10.0 mL	565791	02/15/22 04:28	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568856	02/27/22 21:39	D1R	TAL SAC

## Client Sample ID: MW-9-30

Date Collected 02/ 10/ 22 10:06

Date Received 02/ 12/ 22 10:54

## Lab Sample ID: 320-84757-14

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.7 mL	10.0 mL	565791	02/15/22 04:28	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568856	02/27/22 21:49	D1R	TAL SAC

## Client Sample ID: MW-11-15

Date Collected 02/ 10/ 22 13:54

Date Received 02/ 12/ 22 10:54

## Lab Sample ID: 320-84757-15

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			263.7 mL	10.0 mL	565791	02/15/22 04:28	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568856	02/27/22 21:59	D1R	TAL SAC

## Client Sample ID: EB-11-15

Date Collected 02/ 10/ 22 15:00

Date Received 02/ 12/ 22 10:54

## Lab Sample ID: 320-84757-16

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			272.6 mL	10.0 mL	565791	02/15/22 04:28	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568856	02/27/22 22:09	D1R	TAL SAC

## Client Sample ID: MW-111-15

Date Collected 02/ 10/ 22 13:44

Date Received 02/ 12/ 22 10:54

## Lab Sample ID: 320-84757-17

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			263.7 mL	10.0 mL	565791	02/15/22 04:28	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			568856	02/27/22 22:19	D1R	TAL SAC

### Laboratory References:

TAL SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

## Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15



# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	TAL SAC TAL SAC

**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: Gustavus MW

Job ID: 320-84757-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-84757-1	MW-108-20	Water	02/07/22 15:31	02/12/22 10:54
320-84757-2	MW-1-40	Water	02/08/22 13:40	02/12/22 10:54
320-84757-3	MW-2-30	Water	02/09/22 10:05	02/12/22 10:54
320-84757-4	MW-1-15	Water	02/08/22 14:26	02/12/22 10:54
320-84757-5	MW-10-20	Water	02/08/22 10:19	02/12/22 10:54
320-84757-6	MW-105-20	Water	02/08/22 11:13	02/12/22 10:54
320-84757-7	MW-3-40	Water	02/09/22 14:51	02/12/22 10:54
320-84757-8	MW-8-20	Water	02/07/22 15:41	02/12/22 10:54
320-84757-9	MW-5-20	Water	02/08/22 11:23	02/12/22 10:54
320-84757-10	MW-2-20	Water	02/09/22 10:45	02/12/22 10:54
320-84757-11	MW-102-30	Water	02/09/22 09:55	02/12/22 10:54
320-84757-12	MW-6-20	Water	02/09/22 16:20	02/12/22 10:54
320-84757-13	GAC	Water	02/10/22 16:30	02/12/22 10:54
320-84757-14	MW-9-30	Water	02/10/22 10:06	02/12/22 10:54
320-84757-15	MW-11-15	Water	02/10/22 13:54	02/12/22 10:54
320-84757-16	EB-11-15	Water	02/10/22 15:00	02/12/22 10:54
320-84757-17	MW-111-15	Water	02/10/22 13:44	02/12/22 10:54

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# CHAIN-OF-CUSTODY RECORD

Laboratory GETNICA of  
 Attn: D. Altamirano

Analytical Methods (include preservative if used)

Quote No: \_\_\_\_\_

Turn Around Time:  
 Normal  Rush

J-Flags:  Yes  No

Please Specify \_\_\_\_\_



Remarks/Matrix Composition/Grab? Sample Containers

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-108-20		1531	2/7/22	X	2 grandwater
MW-140		1340	2/18/22	X	
MW-2-30		1005	2/19/22	X	
MW-1-15		1426	2/18/22	X	
MW-10-20		1019	2/18/22	X	
MW-105-20		1113	2/18/22	X	
MW-3-40		1451	2/19/22	X	
MW-8-20		1541	2/7/22	X	
MW-S-20		1123	2/18/22	X	 320-84757 Chain of Custody
MW-2-20		1045	2/19/22	X	

Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Number: <u>102599-019</u>	Total No. of Containers: <u>7</u>	Signature: _____	Signature: _____	Signature: _____
Name: <u>Guestours MW</u>	COC Seals/Intact? <u>Y/N/A</u>	Time: <u>0900</u>	Time: _____	Time: _____
Contact: <u>FLP</u>	Received Good Cond./Cold: <u>Y</u>	Date: <u>2/11/22</u>	Date: _____	Date: _____
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Temp: <u>4-6</u>	Printed Name: <u>A. Mastus</u>	Printed Name: _____	Printed Name: _____
Sampler: <u>A. Mastus</u>	Delivery Method: <u>Go. U. Truck</u>	Company: <u>Shannon + Wilson</u>	Company: _____	Company: _____
<b>Notes:</b>		<b>Received By: 1.</b>	<b>Received By: 2.</b>	<b>Received By: 3.</b>
		Signature: _____	Signature: _____	Signature: _____
		Time: <u>1051</u>	Time: _____	Time: _____
		Date: <u>2/11/22</u>	Date: _____	Date: _____
		Printed Name: <u>D. Altamirano</u>	Printed Name: _____	Printed Name: _____
		Company: _____	Company: _____	Company: _____

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file



# CHAIN-OF-CUSTODY RECORD

Laboratory Page 2 of 2  
 Attn: D. Allwater  
GETNCA

Analytical Methods (include preservative if used)

Quote No: \_\_\_\_\_  
 J-Flags:  Yes  No

Turn Around Time:  
 Normal  Rush  
 Please Specify \_\_\_\_\_

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-102-20		0955	2/10/22	2	Stand water
MW-6-20		1620	2/19/22	2	
GAC		1630	2/10/22	2	
MW-9-30		1006	2/10/22	2	
MW-11-15		1354	2/10/22	2	
GB-11-15		1500	2/10/22	2	
MW-111-15		1344	2/10/22	2	

**Project Information**  
 Number: 10599-019  
 Name: Gustavus MW  
 Contact: KLF  
 Ongoing Project? Yes  No   
 Sampler: AWA MSC

**Sample Receipt**  
 Total No. of Containers: 7  
 COC Seals/Intact: Y/N/A  
 Received Good Cond./Cold: Y  
 Temp: 4-0c  
 Delivery Method: Field Strike

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: _____ Printed Name: <u>A. Masters</u> Company: <u>Shannon + Wilson Inc</u> Time: _____ Date: <u>2/11/22</u>	Signature: _____ Printed Name: _____ Company: _____ Time: _____ Date: _____	Signature: _____ Printed Name: _____ Company: _____ Time: _____ Date: _____
Received By: 1. Signature: _____ Printed Name: <u>David H</u> Company: _____ Time: _____ Date: <u>2/10/22</u>	Received By: 2. Signature: _____ Printed Name: _____ Company: _____ Time: _____ Date: _____	Received By: 3. Signature: _____ Printed Name: _____ Company: _____ Time: _____ Date: _____

**Notes:**  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Distribution: White - shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - shipment - for consignee files  
 Pink - Shannon & Wilson - job file

# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-84757-1

**Login Number: 84757**

**List Source: Eurofins Sacramento**

**List Number: 1**

**Creator: Her, David A**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	184393/169870
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Laboratory Data Review Checklist

Completed By:

Amber Masters

Title:

Environmental Scientist

Date:

March 2, 2022

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins Environmental Testing America (Eurofins)

Laboratory Report Number:

320-84757-1

Laboratory Report Date:

February 28, 2022

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

Laboratory Report Date:

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

Analyses were performed by the Eurofins Laboratory in West Sacramento, CA. The laboratory is approved by the DEC CS program and certified under the Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP) for the requested analyses.

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

The samples were not transferred to a network laboratory or subcontracted out.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

Groundwater samples analyzed for PFAS do not require preservation other than temperature control.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form notes that the samples arrived in good condition.

Laboratory Report Date:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes  No  N/A  Comments:

No discrepancies were noted.

- e. Data quality or usability affected?

Comments:

#### 4. Case Narrative

- a. Present and understandable?

Yes  No  N/A  Comments:

- b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte.

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-565791.

The following samples were yellow prior to extraction: MW-108-20, MW-1-40, MW-10-20, MW-105-20, MW-3-40, MW-8-20, and MW-9-30.

The following samples contained a thin layer of sediment at the bottom of the bottle prior to extraction: MW-1-40, MW-2-30, and MW-9-30.

The following samples contained floating particles in the sample bottle prior to extraction: MW-108-20, MW-10-20, MW-105-20, MW-3-40, MW-8-20, MW-5-20, MW-102-30, MW-6-20, and GAC.

- c. Were all corrective actions documented?

Yes  No  N/A  Comments:

No corrective actions necessary; see above.



Laboratory Report Date:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The laboratory applied the 'I' qualifier to results affected by transition mass ratio failures. The case narrative notes that these results for these analytes in samples *MW-2-30*, *MW-6-20* and *MW-9-30*. may have some high bias. See the following sections for our assessment of data quality and usability.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

The reporting limits (RLs) are less than the applicable DEC regulatory limit for the target PFAS.

e. Data quality or usability affected?

The data quality/usability is not affected.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

Laboratory Report Date:

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; target PFAS were not detected in the method blank sample.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

The samples were not affected by laboratory contamination; see above.

v. Data quality or usability affected?

Comments:

The data quality/usability is not affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A  Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals/Inorganics analyses were not requested for this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; method accuracy and precision were demonstrated to be within acceptable limits.

Laboratory Report Date:

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

Qualification was not required; see above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality/usability is not affected.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

MS/MSD samples were not analyzed with this work order; however, the laboratory analyzed LCS and LCSD samples to assess laboratory accuracy and precision.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals/Inorganics analyses were not requested for this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; MS and MSD samples were not analyzed for this work order.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

Laboratory Report Date:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality/usability is not affected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes  No  N/A  Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A  Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

There were no IDA recovery failures for the reported results.

iv. Data quality or usability affected?

Comments:

The data quality/usability is not affected.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes  No  N/A  Comments:

PFAS are not volatile compounds. A trip blank is not required for the requested analysis.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

Laboratory Report Date:

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; a trip blank is not required for the requested analysis.

v. Data quality or usability affected?

Comments:

The data quality/usability is not affected.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

ii. Submitted blind to lab?

Yes  No  N/A  Comments:The field duplicate pairs *MW-8-20/MW-108-20*, *MW-2-30/MW-102-30*, *MW-5-20/MW-105-20*, and *MW-11-15/MW-111-15* were submitted with this work order.iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration $R_2$  = Field Duplicate ConcentrationYes  No  N/A  Comments:

The relative precision demonstrated between the detected results of the field duplicate samples was within the recommended DQO of 30% for all analytes, where calculable.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality/usability is not affected.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

Laboratory Report Date:

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; target PFAS were not detected in the method blank sample.

iii. Data quality or usability affected?

Comments:

The data quality/usability is not affected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A  Comments:

The perfluorohexanesulfonic acid (PFHxS) results of samples *MW-2-30* and *MW-6-20*, and the perfluorobutanesulfonic acid (PFBS) result of sample *MW-9-30* were affected by a transition mass ratio failure and quantitated manually. Per the laboratory case narrative, we consider these results estimated, biased high, and have applied the 'JH' qualifier.

Due to sampling during a period of snowmelt and heavy rainfall, our samplers noted situations where potentially significant amounts of surface water entered the well casing during sampling. The PFAS results for the following wells are considered potentially biased low and flagged with a "UJ" for the non-detect values and a "JL" for the detected values.

- MW-3-40
- MW-6-20
- MW-9-30
- MW-10-20

Where a given analyte falls into the two categories listed in this box above, the analyte concentration is considered estimated, flagged with a "J" in the analytical table.

## ANALYTICAL REPORT

Eurofins Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

Laboratory Job ID: 320-87432-1  
Client Project/Site: GUS PFAS MW

For:  
Shannon & Wilson, Inc  
2355 Hill Rd.  
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger



---

Authorized for release by:  
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### LINKS

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[www.eurofinsus.com/Env](http://www.eurofinsus.com/Env)

The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

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## Job ID: 320-87432-1

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### Laboratory: Eurofins Sacramento

#### Narrative

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#### Job Narrative 320-87432-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 5/3/2022 3:30 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.0° C.

#### LCMS

Method EPA 537(Mod): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: MW-5-20 (320-87432-3). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s).

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Organic Prep

Method 3535: The following sample MW-5-20 (320-87432-3) in preparation batch 320-586041 was light yellow prior to extraction.

Method 3535: The following samples MW-10-20 (320-87432-4), MW-4-20 (320-87432-6), MW-106-20 (320-87432-13), MW-3-15 (320-87432-15), MW-112-10 (320-87432-16) and MW-12-10 (320-87432-17) in preparation batch 320-586041 were light yellow and contained floating particulates in the sample bottle prior to extraction.

Method 3535: The following samples MW-9-30 (320-87432-5), MW-1-40 (320-87432-8), MW-2-30 (320-87432-11) and MW-3-40 (320-87432-14) in preparation batch 320-586041 were light yellow and had a thin layer of sediments at the bottom of the container prior to extraction.

Method 3535: The following sample MW-7-20 (320-87432-7) in preparation batch 320-586041 contained floating particulates in the sample bottle prior to extraction.

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-586041.

Method 3535: During the solid phase extraction process, the following sample contain non-settable particulates which clogged the solid phase extraction column: MW-5-20 (320-87432-3).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

## Client Sample ID: MW-8-20

## Lab Sample ID: 320-87432-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.83	J	1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-108-20

## Lab Sample ID: 320-87432-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.73	J	1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-5-20

## Lab Sample ID: 320-87432-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.44	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.7	J	1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.4		1.8	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-10-20

## Lab Sample ID: 320-87432-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	8.4		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.1		1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.2	J	1.9	0.79	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.42	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.3		1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	62		1.9	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-9-30

## Lab Sample ID: 320-87432-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	5.6		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.3		1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.3	J	1.9	0.80	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.57	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.9		1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	67		1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-4-20

## Lab Sample ID: 320-87432-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorodecanoic acid (PFDA)	0.31	J	1.9	0.30	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.19	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.91	J	1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-7-20

## Lab Sample ID: 320-87432-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.54	J	1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.2	J	1.9	0.80	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.74	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	5.7		1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-1-40

## Lab Sample ID: 320-87432-8

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

## Client Sample ID: MW-1-15

Lab Sample ID: 320-87432-9

No Detections.

## Client Sample ID: MW-2-20

Lab Sample ID: 320-87432-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	20		1.9	0.56	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	21		1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	69		1.9	0.81	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	18		1.9	0.26	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.53	J	1.9	0.30	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.3		1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	73		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	340		1.9	0.52	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-2-30

Lab Sample ID: 320-87432-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.62	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-6-20

Lab Sample ID: 320-87432-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.34	J	1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.6	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.99	J	1.9	0.52	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-106-20

Lab Sample ID: 320-87432-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.26	J	1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.19	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.6	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.4	J	1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-3-40

Lab Sample ID: 320-87432-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	3.2		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.56	J	1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.2	J	1.9	0.81	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.5	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	12		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	15		1.9	0.52	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-3-15

Lab Sample ID: 320-87432-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.60	J	1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.55	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.8	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.0		1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-112-10

Lab Sample ID: 320-87432-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.6	J	1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

## Client Sample ID: MW-112-10 (Continued)

Lab Sample ID: 320-87432-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	1.8		1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.2		1.8	0.77	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	1.2	J	1.8	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.83	J	1.8	0.28	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.7		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	12		1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: MW-12-10

Lab Sample ID: 320-87432-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.5	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.8	J	1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.1		1.9	0.79	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	1.2	J	1.9	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.7		1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	12		1.9	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: EB-11-15

Lab Sample ID: 320-87432-18

No Detections.

## Client Sample ID: MW-11-15

Lab Sample ID: 320-87432-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	13		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.8		1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	5.9		1.9	0.79	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.76	J I	1.9	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.3		1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	35		1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	170		1.9	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: GAC

Lab Sample ID: 320-87432-20

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

**Client Sample ID: MW-8-20**

**Lab Sample ID: 320-87432-1**

Date Collected: 04/26/22 09:06

Matrix: Water

Date Received: 05/03/22 15:30

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		05/07/22 09:27	05/13/22 20:05	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		05/07/22 09:27	05/13/22 20:05	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		05/07/22 09:27	05/13/22 20:05	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		05/07/22 09:27	05/13/22 20:05	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		05/07/22 09:27	05/13/22 20:05	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		05/07/22 09:27	05/13/22 20:05	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		05/07/22 09:27	05/13/22 20:05	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		05/07/22 09:27	05/13/22 20:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		05/07/22 09:27	05/13/22 20:05	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		05/07/22 09:27	05/13/22 20:05	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.83</b>	<b>J</b>	1.8	0.52	ng/L		05/07/22 09:27	05/13/22 20:05	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		05/07/22 09:27	05/13/22 20:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		05/07/22 09:27	05/13/22 20:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		05/07/22 09:27	05/13/22 20:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		05/07/22 09:27	05/13/22 20:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		05/07/22 09:27	05/13/22 20:05	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		05/07/22 09:27	05/13/22 20:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		05/07/22 09:27	05/13/22 20:05	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		50 - 150	05/07/22 09:27	05/13/22 20:05	1
13C4 PFHpA	101		50 - 150	05/07/22 09:27	05/13/22 20:05	1
13C4 PFOA	98		50 - 150	05/07/22 09:27	05/13/22 20:05	1
13C5 PFNA	100		50 - 150	05/07/22 09:27	05/13/22 20:05	1
13C2 PFDA	98		50 - 150	05/07/22 09:27	05/13/22 20:05	1
13C2 PFUnA	92		50 - 150	05/07/22 09:27	05/13/22 20:05	1
13C2 PFDoA	90		50 - 150	05/07/22 09:27	05/13/22 20:05	1
13C2 PFTeDA	84		50 - 150	05/07/22 09:27	05/13/22 20:05	1
13C3 PFBS	102		50 - 150	05/07/22 09:27	05/13/22 20:05	1
18O2 PFHxS	100		50 - 150	05/07/22 09:27	05/13/22 20:05	1
13C4 PFOS	94		50 - 150	05/07/22 09:27	05/13/22 20:05	1
d3-NMeFOSAA	86		50 - 150	05/07/22 09:27	05/13/22 20:05	1
d5-NEtFOSAA	92		50 - 150	05/07/22 09:27	05/13/22 20:05	1
13C3 HFPO-DA	90		50 - 150	05/07/22 09:27	05/13/22 20:05	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

**Client Sample ID: MW-108-20**

**Lab Sample ID: 320-87432-2**

Date Collected: 04/26/22 08:56

Matrix: Water

Date Received: 05/03/22 15:30

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		05/07/22 09:27	05/13/22 20:16	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		05/07/22 09:27	05/13/22 20:16	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		05/07/22 09:27	05/13/22 20:16	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		05/07/22 09:27	05/13/22 20:16	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		05/07/22 09:27	05/13/22 20:16	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		05/07/22 09:27	05/13/22 20:16	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		05/07/22 09:27	05/13/22 20:16	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		05/07/22 09:27	05/13/22 20:16	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		05/07/22 09:27	05/13/22 20:16	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		05/07/22 09:27	05/13/22 20:16	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.73</b>	<b>J</b>	1.8	0.52	ng/L		05/07/22 09:27	05/13/22 20:16	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		05/07/22 09:27	05/13/22 20:16	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		05/07/22 09:27	05/13/22 20:16	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		05/07/22 09:27	05/13/22 20:16	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		05/07/22 09:27	05/13/22 20:16	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		05/07/22 09:27	05/13/22 20:16	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		05/07/22 09:27	05/13/22 20:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		05/07/22 09:27	05/13/22 20:16	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		50 - 150	05/07/22 09:27	05/13/22 20:16	1
13C4 PFHpA	96		50 - 150	05/07/22 09:27	05/13/22 20:16	1
13C4 PFOA	100		50 - 150	05/07/22 09:27	05/13/22 20:16	1
13C5 PFNA	95		50 - 150	05/07/22 09:27	05/13/22 20:16	1
13C2 PFDA	97		50 - 150	05/07/22 09:27	05/13/22 20:16	1
13C2 PFUnA	87		50 - 150	05/07/22 09:27	05/13/22 20:16	1
13C2 PFDoA	86		50 - 150	05/07/22 09:27	05/13/22 20:16	1
13C2 PFTeDA	84		50 - 150	05/07/22 09:27	05/13/22 20:16	1
13C3 PFBS	98		50 - 150	05/07/22 09:27	05/13/22 20:16	1
18O2 PFHxS	99		50 - 150	05/07/22 09:27	05/13/22 20:16	1
13C4 PFOS	86		50 - 150	05/07/22 09:27	05/13/22 20:16	1
d3-NMeFOSAA	84		50 - 150	05/07/22 09:27	05/13/22 20:16	1
d5-NEtFOSAA	86		50 - 150	05/07/22 09:27	05/13/22 20:16	1
13C3 HFPO-DA	89		50 - 150	05/07/22 09:27	05/13/22 20:16	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

**Client Sample ID: MW-5-20**

**Lab Sample ID: 320-87432-3**

Date Collected: 04/26/22 10:17

Matrix: Water

Date Received: 05/03/22 15:30

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.54	ng/L		05/07/22 09:27	05/13/22 20:26	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		05/07/22 09:27	05/13/22 20:26	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.79	ng/L		05/07/22 09:27	05/13/22 20:26	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		05/07/22 09:27	05/13/22 20:26	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		05/07/22 09:27	05/13/22 20:26	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		05/07/22 09:27	05/13/22 20:26	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		05/07/22 09:27	05/13/22 20:26	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		05/07/22 09:27	05/13/22 20:26	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		05/07/22 09:27	05/13/22 20:26	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.44</b>	<b>J</b>	1.8	0.18	ng/L		05/07/22 09:27	05/13/22 20:26	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>1.7</b>	<b>J</b>	1.8	0.53	ng/L		05/07/22 09:27	05/13/22 20:26	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>3.4</b>		1.8	0.50	ng/L		05/07/22 09:27	05/13/22 20:26	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		05/07/22 09:27	05/13/22 20:26	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		05/07/22 09:27	05/13/22 20:26	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		05/07/22 09:27	05/13/22 20:26	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		05/07/22 09:27	05/13/22 20:26	1
11-Chloroeicosadecafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.30	ng/L		05/07/22 09:27	05/13/22 20:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		05/07/22 09:27	05/13/22 20:26	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	68		50 - 150	05/07/22 09:27	05/13/22 20:26	1
13C4 PFHpA	69		50 - 150	05/07/22 09:27	05/13/22 20:26	1
13C4 PFOA	69		50 - 150	05/07/22 09:27	05/13/22 20:26	1
13C5 PFNA	67		50 - 150	05/07/22 09:27	05/13/22 20:26	1
13C2 PFDA	63		50 - 150	05/07/22 09:27	05/13/22 20:26	1
13C2 PFUnA	54		50 - 150	05/07/22 09:27	05/13/22 20:26	1
13C2 PFDoA	51		50 - 150	05/07/22 09:27	05/13/22 20:26	1
13C2 PFTeDA	49	*5-	50 - 150	05/07/22 09:27	05/13/22 20:26	1
13C3 PFBS	73		50 - 150	05/07/22 09:27	05/13/22 20:26	1
18O2 PFHxS	68		50 - 150	05/07/22 09:27	05/13/22 20:26	1
13C4 PFOS	63		50 - 150	05/07/22 09:27	05/13/22 20:26	1
d3-NMeFOSAA	55		50 - 150	05/07/22 09:27	05/13/22 20:26	1
d5-NEtFOSAA	51		50 - 150	05/07/22 09:27	05/13/22 20:26	1
13C3 HFPO-DA	67		50 - 150	05/07/22 09:27	05/13/22 20:26	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

**Client Sample ID: MW-10-20**

**Lab Sample ID: 320-87432-4**

Date Collected: 04/26/22 11:11

Matrix: Water

Date Received: 05/03/22 15:30

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perf luorohexanoic acid (PFHxA)	8.4		1.9	0.54	ng/L		05/07/22 09:27	05/13/22 20:37	1
Perf luoroheptanoic acid (PFHpA)	3.1		1.9	0.23	ng/L		05/07/22 09:27	05/13/22 20:37	1
Perf luorooctanoic acid (PFOA)	1.2	J	1.9	0.79	ng/L		05/07/22 09:27	05/13/22 20:37	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		05/07/22 09:27	05/13/22 20:37	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		05/07/22 09:27	05/13/22 20:37	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		05/07/22 09:27	05/13/22 20:37	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		05/07/22 09:27	05/13/22 20:37	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		05/07/22 09:27	05/13/22 20:37	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		05/07/22 09:27	05/13/22 20:37	1
Perf luorobutanesulfonic acid (PFBS)	0.42	J	1.9	0.19	ng/L		05/07/22 09:27	05/13/22 20:37	1
Perf luorohexanesulfonic acid (PFHxS)	8.3		1.9	0.53	ng/L		05/07/22 09:27	05/13/22 20:37	1
Perf luorooctanesulfonic acid (PFOS)	62		1.9	0.50	ng/L		05/07/22 09:27	05/13/22 20:37	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		05/07/22 09:27	05/13/22 20:37	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		05/07/22 09:27	05/13/22 20:37	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		05/07/22 09:27	05/13/22 20:37	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		05/07/22 09:27	05/13/22 20:37	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		05/07/22 09:27	05/13/22 20:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		05/07/22 09:27	05/13/22 20:37	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		50 - 150	05/07/22 09:27	05/13/22 20:37	1
13C4 PFHpA	89		50 - 150	05/07/22 09:27	05/13/22 20:37	1
13C4 PFOA	93		50 - 150	05/07/22 09:27	05/13/22 20:37	1
13C5 PFNA	91		50 - 150	05/07/22 09:27	05/13/22 20:37	1
13C2 PFDA	86		50 - 150	05/07/22 09:27	05/13/22 20:37	1
13C2 PFUnA	86		50 - 150	05/07/22 09:27	05/13/22 20:37	1
13C2 PFDoA	82		50 - 150	05/07/22 09:27	05/13/22 20:37	1
13C2 PFTeDA	75		50 - 150	05/07/22 09:27	05/13/22 20:37	1
13C3 PFBS	97		50 - 150	05/07/22 09:27	05/13/22 20:37	1
18O2 PFHxS	94		50 - 150	05/07/22 09:27	05/13/22 20:37	1
13C4 PFOS	82		50 - 150	05/07/22 09:27	05/13/22 20:37	1
d3-NMeFOSAA	82		50 - 150	05/07/22 09:27	05/13/22 20:37	1
d5-NEtFOSAA	80		50 - 150	05/07/22 09:27	05/13/22 20:37	1
13C3 HFPO-DA	91		50 - 150	05/07/22 09:27	05/13/22 20:37	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

**Client Sample ID: MW-9-30**

**Lab Sample ID: 320-87432-5**

Date Collected: 04/26/22 12:27

Matrix: Water

Date Received: 05/03/22 15:30

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perf luorohexanoic acid (PFHxA)	5.6		1.9	0.54	ng/L		05/07/22 09:27	05/13/22 20:47	1
Perf luoroheptanoic acid (PFHpA)	2.3		1.9	0.23	ng/L		05/07/22 09:27	05/13/22 20:47	1
Perf luorooctanoic acid (PFOA)	1.3	J	1.9	0.80	ng/L		05/07/22 09:27	05/13/22 20:47	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		05/07/22 09:27	05/13/22 20:47	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		05/07/22 09:27	05/13/22 20:47	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		05/07/22 09:27	05/13/22 20:47	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		05/07/22 09:27	05/13/22 20:47	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		05/07/22 09:27	05/13/22 20:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		05/07/22 09:27	05/13/22 20:47	1
Perf luorobutanesulfonic acid (PFBS)	0.57	J	1.9	0.19	ng/L		05/07/22 09:27	05/13/22 20:47	1
Perf luorohexanesulfonic acid (PFHxS)	8.9		1.9	0.53	ng/L		05/07/22 09:27	05/13/22 20:47	1
Perf luorooctanesulfonic acid (PFOS)	67		1.9	0.51	ng/L		05/07/22 09:27	05/13/22 20:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		05/07/22 09:27	05/13/22 20:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		05/07/22 09:27	05/13/22 20:47	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		05/07/22 09:27	05/13/22 20:47	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		05/07/22 09:27	05/13/22 20:47	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		05/07/22 09:27	05/13/22 20:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		05/07/22 09:27	05/13/22 20:47	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C2 PFHxA	95		50 - 150				05/07/22 09:27	05/13/22 20:47	1
13C4 PFHpA	94		50 - 150				05/07/22 09:27	05/13/22 20:47	1
13C4 PFOA	95		50 - 150				05/07/22 09:27	05/13/22 20:47	1
13C5 PFNA	93		50 - 150				05/07/22 09:27	05/13/22 20:47	1
13C2 PFDA	87		50 - 150				05/07/22 09:27	05/13/22 20:47	1
13C2 PFUnA	81		50 - 150				05/07/22 09:27	05/13/22 20:47	1
13C2 PFDoA	82		50 - 150				05/07/22 09:27	05/13/22 20:47	1
13C2 PFTeDA	76		50 - 150				05/07/22 09:27	05/13/22 20:47	1
13C3 PFBS	89		50 - 150				05/07/22 09:27	05/13/22 20:47	1
18O2 PFHxS	93		50 - 150				05/07/22 09:27	05/13/22 20:47	1
13C4 PFOS	84		50 - 150				05/07/22 09:27	05/13/22 20:47	1
d3-NMeFOSAA	83		50 - 150				05/07/22 09:27	05/13/22 20:47	1
d5-NEtFOSAA	78		50 - 150				05/07/22 09:27	05/13/22 20:47	1
13C3 HFPO-DA	86		50 - 150				05/07/22 09:27	05/13/22 20:47	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

**Client Sample ID: MW-4-20**

**Lab Sample ID: 320-87432-6**

Date Collected: 04/26/22 13:34

Matrix: Water

Date Received: 05/03/22 15:30

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.56	ng/L		05/07/22 09:27	05/13/22 20:57	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		05/07/22 09:27	05/13/22 20:57	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		05/07/22 09:27	05/13/22 20:57	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		05/07/22 09:27	05/13/22 20:57	1
<b>Perfluorodecanoic acid (PFDA)</b>	<b>0.31</b>	<b>J</b>	1.9	0.30	ng/L		05/07/22 09:27	05/13/22 20:57	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		05/07/22 09:27	05/13/22 20:57	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		05/07/22 09:27	05/13/22 20:57	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		05/07/22 09:27	05/13/22 20:57	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		05/07/22 09:27	05/13/22 20:57	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.19</b>	<b>J</b>	1.9	0.19	ng/L		05/07/22 09:27	05/13/22 20:57	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.91</b>	<b>J</b>	1.9	0.55	ng/L		05/07/22 09:27	05/13/22 20:57	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		05/07/22 09:27	05/13/22 20:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		05/07/22 09:27	05/13/22 20:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		05/07/22 09:27	05/13/22 20:57	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		05/07/22 09:27	05/13/22 20:57	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		05/07/22 09:27	05/13/22 20:57	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		05/07/22 09:27	05/13/22 20:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		05/07/22 09:27	05/13/22 20:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		50 - 150	05/07/22 09:27	05/13/22 20:57	1
13C4 PFHpA	94		50 - 150	05/07/22 09:27	05/13/22 20:57	1
13C4 PFOA	96		50 - 150	05/07/22 09:27	05/13/22 20:57	1
13C5 PFNA	95		50 - 150	05/07/22 09:27	05/13/22 20:57	1
13C2 PFDA	88		50 - 150	05/07/22 09:27	05/13/22 20:57	1
13C2 PFUnA	88		50 - 150	05/07/22 09:27	05/13/22 20:57	1
13C2 PFDoA	82		50 - 150	05/07/22 09:27	05/13/22 20:57	1
13C2 PFTeDA	75		50 - 150	05/07/22 09:27	05/13/22 20:57	1
13C3 PFBS	98		50 - 150	05/07/22 09:27	05/13/22 20:57	1
18O2 PFHxS	100		50 - 150	05/07/22 09:27	05/13/22 20:57	1
13C4 PFOS	85		50 - 150	05/07/22 09:27	05/13/22 20:57	1
d3-NMeFOSAA	85		50 - 150	05/07/22 09:27	05/13/22 20:57	1
d5-NEtFOSAA	82		50 - 150	05/07/22 09:27	05/13/22 20:57	1
13C3 HFPO-DA	92		50 - 150	05/07/22 09:27	05/13/22 20:57	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

**Client Sample ID: MW-7-20**

**Lab Sample ID: 320-87432-7**

Date Collected: 04/26/22 14:49

Matrix: Water

Date Received: 05/03/22 15:30

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		05/07/22 09:27	05/13/22 21:08	1
<b>Perfluoroheptanoic acid (PFHpA)</b>	<b>0.54</b>	<b>J</b>	1.9	0.24	ng/L		05/07/22 09:27	05/13/22 21:08	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>1.2</b>	<b>J</b>	1.9	0.80	ng/L		05/07/22 09:27	05/13/22 21:08	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		05/07/22 09:27	05/13/22 21:08	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		05/07/22 09:27	05/13/22 21:08	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		05/07/22 09:27	05/13/22 21:08	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		05/07/22 09:27	05/13/22 21:08	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		05/07/22 09:27	05/13/22 21:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		05/07/22 09:27	05/13/22 21:08	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		05/07/22 09:27	05/13/22 21:08	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.74</b>	<b>J</b>	1.9	0.54	ng/L		05/07/22 09:27	05/13/22 21:08	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>5.7</b>		1.9	0.51	ng/L		05/07/22 09:27	05/13/22 21:08	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		05/07/22 09:27	05/13/22 21:08	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		05/07/22 09:27	05/13/22 21:08	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		05/07/22 09:27	05/13/22 21:08	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		05/07/22 09:27	05/13/22 21:08	1
11-Chloroeicosadecafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		05/07/22 09:27	05/13/22 21:08	1
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		05/07/22 09:27	05/13/22 21:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	90		50 - 150	05/07/22 09:27	05/13/22 21:08	1
13C4 PFHpA	92		50 - 150	05/07/22 09:27	05/13/22 21:08	1
13C4 PFOA	93		50 - 150	05/07/22 09:27	05/13/22 21:08	1
13C5 PFNA	90		50 - 150	05/07/22 09:27	05/13/22 21:08	1
13C2 PFDA	90		50 - 150	05/07/22 09:27	05/13/22 21:08	1
13C2 PFUnA	84		50 - 150	05/07/22 09:27	05/13/22 21:08	1
13C2 PFDoA	83		50 - 150	05/07/22 09:27	05/13/22 21:08	1
13C2 PFTeDA	80		50 - 150	05/07/22 09:27	05/13/22 21:08	1
13C3 PFBS	93		50 - 150	05/07/22 09:27	05/13/22 21:08	1
18O2 PFHxS	93		50 - 150	05/07/22 09:27	05/13/22 21:08	1
13C4 PFOS	83		50 - 150	05/07/22 09:27	05/13/22 21:08	1
d3-NMeFOSAA	87		50 - 150	05/07/22 09:27	05/13/22 21:08	1
d5-NEtFOSAA	84		50 - 150	05/07/22 09:27	05/13/22 21:08	1
13C3 HFPO-DA	81		50 - 150	05/07/22 09:27	05/13/22 21:08	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: GUS PFAS MW

Job ID: 320-87432-1

**Client Sample ID: MW-1-40**

**Lab Sample ID: 320-87432-8**

Date Collected: 04/26/22 15:52

Matrix: Water

Date Received: 05/03/22 15:30

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		05/07/22 09:27	05/13/22 21:39	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		05/07/22 09:27	05/13/22 21:39	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		05/07/22 09:27	05/13/22 21:39	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		05/07/22 09:27	05/13/22 21:39	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		05/07/22 09:27	05/13/22 21:39	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		05/07/22 09:27	05/13/22 21:39	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		05/07/22 09:27	05/13/22 21:39	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		05/07/22 09:27	05/13/22 21:39	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		05/07/22 09:27	05/13/22 21:39	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		05/07/22 09:27	05/13/22 21:39	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.53	ng/L		05/07/22 09:27	05/13/22 21:39	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		05/07/22 09:27	05/13/22 21:39	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		05/07/22 09:27	05/13/22 21:39	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		05/07/22 09:27	05/13/22 21:39	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		05/07/22 09:27	05/13/22 21:39	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		05/07/22 09:27	05/13/22 21:39	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.30	ng/L		05/07/22 09:27	05/13/22 21:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		05/07/22 09:27	05/13/22 21:39	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		50 - 150	05/07/22 09:27	05/13/22 21:39	1
13C4 PFHpA	94		50 - 150	05/07/22 09:27	05/13/22 21:39	1
13C4 PFOA	99		50 - 150	05/07/22 09:27	05/13/22 21:39	1
13C5 PFNA	96		50 - 150	05/07/22 09:27	05/13/22 21:39	1
13C2 PFDA	90		50 - 150	05/07/22 09:27	05/13/22 21:39	1
13C2 PFUnA	82		50 - 150	05/07/22 09:27	05/13/22 21:39	1
13C2 PFDoA	82		50 - 150	05/07/22 09:27	05/13/22 21:39	1
13C2 PFTeDA	81		50 - 150	05/07/22 09:27	05/13/22 21:39	1
13C3 PFBS	101		50 - 150	05/07/22 09:27	05/13/22 21:39	1
18O2 PFHxS	98		50 - 150	05/07/22 09:27	05/13/22 21:39	1
13C4 PFOS	87		50 - 150	05/07/22 09:27	05/13/22 21:39	1
d3-NMeFOSAA	81		50 - 150	05/07/22 09:27	05/13/22 21:39	1
d5-NEtFOSAA	87		50 - 150	05/07/22 09:27	05/13/22 21:39	1
13C3 HFPO-DA	85		50 - 150	05/07/22 09:27	05/13/22 21:39	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: GUS PFAS MW

Job ID: 320-87432-1

**Client Sample ID: MW-1-1 5**

**Lab Sample ID: 320-87432-9**

Date Collected: 04/26/22 16:14

Matrix: Water

Date Received: 05/03/22 15:30

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		05/07/22 09:27	05/13/22 21:49	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		05/07/22 09:27	05/13/22 21:49	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		05/07/22 09:27	05/13/22 21:49	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		05/07/22 09:27	05/13/22 21:49	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		05/07/22 09:27	05/13/22 21:49	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		05/07/22 09:27	05/13/22 21:49	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		05/07/22 09:27	05/13/22 21:49	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		05/07/22 09:27	05/13/22 21:49	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		05/07/22 09:27	05/13/22 21:49	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		05/07/22 09:27	05/13/22 21:49	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		05/07/22 09:27	05/13/22 21:49	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		05/07/22 09:27	05/13/22 21:49	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		05/07/22 09:27	05/13/22 21:49	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		05/07/22 09:27	05/13/22 21:49	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		05/07/22 09:27	05/13/22 21:49	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		05/07/22 09:27	05/13/22 21:49	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		05/07/22 09:27	05/13/22 21:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		05/07/22 09:27	05/13/22 21:49	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		50 - 150	05/07/22 09:27	05/13/22 21:49	1
13C4 PFHpA	92		50 - 150	05/07/22 09:27	05/13/22 21:49	1
13C4 PFOA	95		50 - 150	05/07/22 09:27	05/13/22 21:49	1
13C5 PFNA	92		50 - 150	05/07/22 09:27	05/13/22 21:49	1
13C2 PFDA	92		50 - 150	05/07/22 09:27	05/13/22 21:49	1
13C2 PFUnA	86		50 - 150	05/07/22 09:27	05/13/22 21:49	1
13C2 PFDoA	84		50 - 150	05/07/22 09:27	05/13/22 21:49	1
13C2 PFTeDA	86		50 - 150	05/07/22 09:27	05/13/22 21:49	1
13C3 PFBS	92		50 - 150	05/07/22 09:27	05/13/22 21:49	1
18O2 PFHxS	92		50 - 150	05/07/22 09:27	05/13/22 21:49	1
13C4 PFOS	81		50 - 150	05/07/22 09:27	05/13/22 21:49	1
d3-NMeFOSAA	90		50 - 150	05/07/22 09:27	05/13/22 21:49	1
d5-NEtFOSAA	92		50 - 150	05/07/22 09:27	05/13/22 21:49	1
13C3 HFPO-DA	89		50 - 150	05/07/22 09:27	05/13/22 21:49	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

**Client Sample ID: MW-2-20**

**Lab Sample ID: 320-87432-1 0**

Date Collected: 04/26/22 17:06

Matrix: Water

Date Received: 05/03/22 15:30

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perf luorohexanoic acid (PFHxA)	20		1.9	0.56	ng/L		05/07/22 09:27	05/13/22 22:00	1
Perf luoroheptanoic acid (PFHpA)	21		1.9	0.24	ng/L		05/07/22 09:27	05/13/22 22:00	1
Perf luorooctanoic acid (PFOA)	69		1.9	0.81	ng/L		05/07/22 09:27	05/13/22 22:00	1
Perf luorononanoic acid (PFNA)	18		1.9	0.26	ng/L		05/07/22 09:27	05/13/22 22:00	1
Perf luorodecanoic acid (PFDA)	0.53	J	1.9	0.30	ng/L		05/07/22 09:27	05/13/22 22:00	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		05/07/22 09:27	05/13/22 22:00	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		05/07/22 09:27	05/13/22 22:00	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		05/07/22 09:27	05/13/22 22:00	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		05/07/22 09:27	05/13/22 22:00	1
Perf luorobutanesulfonic acid (PFBS)	2.3		1.9	0.19	ng/L		05/07/22 09:27	05/13/22 22:00	1
Perf luorohexanesulfonic acid (PFHxS)	73		1.9	0.55	ng/L		05/07/22 09:27	05/13/22 22:00	1
Perf luorooctanesulfonic acid (PFOS)	340		1.9	0.52	ng/L		05/07/22 09:27	05/13/22 22:00	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		05/07/22 09:27	05/13/22 22:00	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		05/07/22 09:27	05/13/22 22:00	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		05/07/22 09:27	05/13/22 22:00	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		05/07/22 09:27	05/13/22 22:00	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		05/07/22 09:27	05/13/22 22:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		05/07/22 09:27	05/13/22 22:00	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		50 - 150	05/07/22 09:27	05/13/22 22:00	1
13C4 PFHpA	95		50 - 150	05/07/22 09:27	05/13/22 22:00	1
13C4 PFOA	98		50 - 150	05/07/22 09:27	05/13/22 22:00	1
13C5 PFNA	93		50 - 150	05/07/22 09:27	05/13/22 22:00	1
13C2 PFDA	92		50 - 150	05/07/22 09:27	05/13/22 22:00	1
13C2 PFUnA	89		50 - 150	05/07/22 09:27	05/13/22 22:00	1
13C2 PFDoA	88		50 - 150	05/07/22 09:27	05/13/22 22:00	1
13C2 PFTeDA	82		50 - 150	05/07/22 09:27	05/13/22 22:00	1
13C3 PFBS	98		50 - 150	05/07/22 09:27	05/13/22 22:00	1
18O2 PFHxS	96		50 - 150	05/07/22 09:27	05/13/22 22:00	1
13C4 PFOS	87		50 - 150	05/07/22 09:27	05/13/22 22:00	1
d3-NMeFOSAA	90		50 - 150	05/07/22 09:27	05/13/22 22:00	1
d5-NEtFOSAA	89		50 - 150	05/07/22 09:27	05/13/22 22:00	1
13C3 HFPO-DA	92		50 - 150	05/07/22 09:27	05/13/22 22:00	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

**Client Sample ID: MW-2-30**

**Lab Sample ID: 320-87432-11**

**Date Collected: 04/26/22 17:39**

**Matrix: Water**

**Date Received: 05/03/22 15:30**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		05/07/22 09:27	05/13/22 22:10	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		05/07/22 09:27	05/13/22 22:10	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		05/07/22 09:27	05/13/22 22:10	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		05/07/22 09:27	05/13/22 22:10	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		05/07/22 09:27	05/13/22 22:10	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		05/07/22 09:27	05/13/22 22:10	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		05/07/22 09:27	05/13/22 22:10	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		05/07/22 09:27	05/13/22 22:10	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		05/07/22 09:27	05/13/22 22:10	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.62</b>	<b>J</b>	1.9	0.19	ng/L		05/07/22 09:27	05/13/22 22:10	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.54	ng/L		05/07/22 09:27	05/13/22 22:10	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		05/07/22 09:27	05/13/22 22:10	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		05/07/22 09:27	05/13/22 22:10	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		05/07/22 09:27	05/13/22 22:10	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		05/07/22 09:27	05/13/22 22:10	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		05/07/22 09:27	05/13/22 22:10	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		05/07/22 09:27	05/13/22 22:10	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		05/07/22 09:27	05/13/22 22:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		50 - 150	05/07/22 09:27	05/13/22 22:10	1
13C4 PFHpA	98		50 - 150	05/07/22 09:27	05/13/22 22:10	1
13C4 PFOA	101		50 - 150	05/07/22 09:27	05/13/22 22:10	1
13C5 PFNA	93		50 - 150	05/07/22 09:27	05/13/22 22:10	1
13C2 PFDA	92		50 - 150	05/07/22 09:27	05/13/22 22:10	1
13C2 PFUnA	87		50 - 150	05/07/22 09:27	05/13/22 22:10	1
13C2 PFDoA	87		50 - 150	05/07/22 09:27	05/13/22 22:10	1
13C2 PFTeDA	85		50 - 150	05/07/22 09:27	05/13/22 22:10	1
13C3 PFBS	99		50 - 150	05/07/22 09:27	05/13/22 22:10	1
18O2 PFHxS	99		50 - 150	05/07/22 09:27	05/13/22 22:10	1
13C4 PFOS	88		50 - 150	05/07/22 09:27	05/13/22 22:10	1
d3-NMeFOSAA	88		50 - 150	05/07/22 09:27	05/13/22 22:10	1
d5-NEtFOSAA	88		50 - 150	05/07/22 09:27	05/13/22 22:10	1
13C3 HFPO-DA	91		50 - 150	05/07/22 09:27	05/13/22 22:10	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

**Client Sample ID: MW-6-20**

**Lab Sample ID: 320-87432-1 2**

Date Collected: 04/27/22 09:35

Matrix: Water

Date Received: 05/03/22 15:30

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		05/07/22 09:27	05/13/22 22:21	1
<b>Perfluoroheptanoic acid (PFHpA)</b>	<b>0.34</b>	<b>J</b>	1.9	0.24	ng/L		05/07/22 09:27	05/13/22 22:21	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		05/07/22 09:27	05/13/22 22:21	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		05/07/22 09:27	05/13/22 22:21	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		05/07/22 09:27	05/13/22 22:21	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		05/07/22 09:27	05/13/22 22:21	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		05/07/22 09:27	05/13/22 22:21	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		05/07/22 09:27	05/13/22 22:21	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		05/07/22 09:27	05/13/22 22:21	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		05/07/22 09:27	05/13/22 22:21	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>1.6</b>	<b>J</b>	1.9	0.54	ng/L		05/07/22 09:27	05/13/22 22:21	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.99</b>	<b>J</b>	1.9	0.52	ng/L		05/07/22 09:27	05/13/22 22:21	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		05/07/22 09:27	05/13/22 22:21	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		05/07/22 09:27	05/13/22 22:21	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		05/07/22 09:27	05/13/22 22:21	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		05/07/22 09:27	05/13/22 22:21	1
11-Chloroeicosadecafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		05/07/22 09:27	05/13/22 22:21	1
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		05/07/22 09:27	05/13/22 22:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	90		50 - 150	05/07/22 09:27	05/13/22 22:21	1
13C4 PFHpA	95		50 - 150	05/07/22 09:27	05/13/22 22:21	1
13C4 PFOA	95		50 - 150	05/07/22 09:27	05/13/22 22:21	1
13C5 PFNA	91		50 - 150	05/07/22 09:27	05/13/22 22:21	1
13C2 PFDA	93		50 - 150	05/07/22 09:27	05/13/22 22:21	1
13C2 PFUnA	87		50 - 150	05/07/22 09:27	05/13/22 22:21	1
13C2 PFDoA	83		50 - 150	05/07/22 09:27	05/13/22 22:21	1
13C2 PFTeDA	82		50 - 150	05/07/22 09:27	05/13/22 22:21	1
13C3 PFBS	99		50 - 150	05/07/22 09:27	05/13/22 22:21	1
18O2 PFHxS	98		50 - 150	05/07/22 09:27	05/13/22 22:21	1
13C4 PFOS	87		50 - 150	05/07/22 09:27	05/13/22 22:21	1
d3-NMeFOSAA	87		50 - 150	05/07/22 09:27	05/13/22 22:21	1
d5-NEtFOSAA	84		50 - 150	05/07/22 09:27	05/13/22 22:21	1
13C3 HFPO-DA	88		50 - 150	05/07/22 09:27	05/13/22 22:21	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

**Client Sample ID: MW-106-20**

**Lab Sample ID: 320-87432-1 3**

Date Collected: 04/27/22 09:25

Matrix: Water

Date Received: 05/03/22 15:30

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		05/07/22 09:27	05/13/22 22:31	1
<b>Perfluoroheptanoic acid (PFHpA)</b>	<b>0.26</b>	<b>J</b>	1.9	0.24	ng/L		05/07/22 09:27	05/13/22 22:31	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		05/07/22 09:27	05/13/22 22:31	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		05/07/22 09:27	05/13/22 22:31	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		05/07/22 09:27	05/13/22 22:31	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		05/07/22 09:27	05/13/22 22:31	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		05/07/22 09:27	05/13/22 22:31	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		05/07/22 09:27	05/13/22 22:31	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		05/07/22 09:27	05/13/22 22:31	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.19</b>	<b>J</b>	1.9	0.19	ng/L		05/07/22 09:27	05/13/22 22:31	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>1.6</b>	<b>J</b>	1.9	0.54	ng/L		05/07/22 09:27	05/13/22 22:31	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>1.4</b>	<b>J</b>	1.9	0.51	ng/L		05/07/22 09:27	05/13/22 22:31	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		05/07/22 09:27	05/13/22 22:31	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		05/07/22 09:27	05/13/22 22:31	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		05/07/22 09:27	05/13/22 22:31	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		05/07/22 09:27	05/13/22 22:31	1
11-Chloroeicosadecafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		05/07/22 09:27	05/13/22 22:31	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		05/07/22 09:27	05/13/22 22:31	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		50 - 150	05/07/22 09:27	05/13/22 22:31	1
13C4 PFHpA	93		50 - 150	05/07/22 09:27	05/13/22 22:31	1
13C4 PFOA	98		50 - 150	05/07/22 09:27	05/13/22 22:31	1
13C5 PFNA	94		50 - 150	05/07/22 09:27	05/13/22 22:31	1
13C2 PFDA	89		50 - 150	05/07/22 09:27	05/13/22 22:31	1
13C2 PFUnA	88		50 - 150	05/07/22 09:27	05/13/22 22:31	1
13C2 PFDoA	84		50 - 150	05/07/22 09:27	05/13/22 22:31	1
13C2 PFTeDA	79		50 - 150	05/07/22 09:27	05/13/22 22:31	1
13C3 PFBS	99		50 - 150	05/07/22 09:27	05/13/22 22:31	1
18O2 PFHxS	95		50 - 150	05/07/22 09:27	05/13/22 22:31	1
13C4 PFOS	82		50 - 150	05/07/22 09:27	05/13/22 22:31	1
d3-NMeFOSAA	86		50 - 150	05/07/22 09:27	05/13/22 22:31	1
d5-NEtFOSAA	82		50 - 150	05/07/22 09:27	05/13/22 22:31	1
13C3 HFPO-DA	89		50 - 150	05/07/22 09:27	05/13/22 22:31	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

**Client Sample ID: MW-3-40**

**Lab Sample ID: 320-87432-1 4**

Date Collected: 04/27/22 11:24

Matrix: Water

Date Received: 05/03/22 15:30

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perf luorohexanoic acid (PFHxA)	3.2		1.9	0.55	ng/L		05/07/22 09:27	05/11/22 03:55	1
Perf luoroheptanoic acid (PFHpA)	0.56	J	1.9	0.24	ng/L		05/07/22 09:27	05/11/22 03:55	1
Perf luorooctanoic acid (PFOA)	1.2	J	1.9	0.81	ng/L		05/07/22 09:27	05/11/22 03:55	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		05/07/22 09:27	05/11/22 03:55	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		05/07/22 09:27	05/11/22 03:55	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		05/07/22 09:27	05/11/22 03:55	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		05/07/22 09:27	05/11/22 03:55	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		05/07/22 09:27	05/11/22 03:55	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		05/07/22 09:27	05/11/22 03:55	1
Perf luorobutanesulfonic acid (PFBS)	1.5	J	1.9	0.19	ng/L		05/07/22 09:27	05/11/22 03:55	1
Perf luorohexanesulfonic acid (PFHxS)	12		1.9	0.54	ng/L		05/07/22 09:27	05/11/22 03:55	1
Perf luorooctanesulfonic acid (PFOS)	15		1.9	0.52	ng/L		05/07/22 09:27	05/11/22 03:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		05/07/22 09:27	05/11/22 03:55	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		05/07/22 09:27	05/11/22 03:55	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		05/07/22 09:27	05/11/22 03:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		05/07/22 09:27	05/11/22 03:55	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		05/07/22 09:27	05/11/22 03:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		05/07/22 09:27	05/11/22 03:55	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	87		50 - 150	05/07/22 09:27	05/11/22 03:55	1
13C4 PFHpA	85		50 - 150	05/07/22 09:27	05/11/22 03:55	1
13C4 PFOA	89		50 - 150	05/07/22 09:27	05/11/22 03:55	1
13C5 PFNA	86		50 - 150	05/07/22 09:27	05/11/22 03:55	1
13C2 PFDA	78		50 - 150	05/07/22 09:27	05/11/22 03:55	1
13C2 PFUnA	74		50 - 150	05/07/22 09:27	05/11/22 03:55	1
13C2 PFDoA	66		50 - 150	05/07/22 09:27	05/11/22 03:55	1
13C2 PFTeDA	74		50 - 150	05/07/22 09:27	05/11/22 03:55	1
13C3 PFBS	87		50 - 150	05/07/22 09:27	05/11/22 03:55	1
18O2 PFHxS	93		50 - 150	05/07/22 09:27	05/11/22 03:55	1
13C4 PFOS	83		50 - 150	05/07/22 09:27	05/11/22 03:55	1
d3-NMeFOSAA	82		50 - 150	05/07/22 09:27	05/11/22 03:55	1
d5-NEtFOSAA	86		50 - 150	05/07/22 09:27	05/11/22 03:55	1
13C3 HFPO-DA	83		50 - 150	05/07/22 09:27	05/11/22 03:55	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

**Client Sample ID: MW-3-1 5**

**Lab Sample ID: 320-87432-1 5**

Date Collected: 04/27/22 12:08

Matrix: Water

Date Received: 05/03/22 15:30

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perf luorohexanoic acid (PFHxA)</b>	<b>0.60</b>	<b>J</b>	1.9	0.55	ng/L		05/07/22 09:27	05/11/22 04:05	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		05/07/22 09:27	05/11/22 04:05	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		05/07/22 09:27	05/11/22 04:05	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		05/07/22 09:27	05/11/22 04:05	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		05/07/22 09:27	05/11/22 04:05	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		05/07/22 09:27	05/11/22 04:05	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		05/07/22 09:27	05/11/22 04:05	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		05/07/22 09:27	05/11/22 04:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		05/07/22 09:27	05/11/22 04:05	1
<b>Perf luorobutanesulfonic acid (PFBS)</b>	<b>0.55</b>	<b>J</b>	1.9	0.19	ng/L		05/07/22 09:27	05/11/22 04:05	1
<b>Perf luorohexanesulfonic acid (PFHxS)</b>	<b>1.8</b>	<b>J</b>	1.9	0.54	ng/L		05/07/22 09:27	05/11/22 04:05	1
<b>Perf luorooctanesulfonic acid (PFOS)</b>	<b>2.0</b>		1.9	0.51	ng/L		05/07/22 09:27	05/11/22 04:05	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		05/07/22 09:27	05/11/22 04:05	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		05/07/22 09:27	05/11/22 04:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		05/07/22 09:27	05/11/22 04:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		05/07/22 09:27	05/11/22 04:05	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		05/07/22 09:27	05/11/22 04:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		05/07/22 09:27	05/11/22 04:05	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	98		50 - 150	05/07/22 09:27	05/11/22 04:05	1
13C4 PFHpA	94		50 - 150	05/07/22 09:27	05/11/22 04:05	1
13C4 PFOA	96		50 - 150	05/07/22 09:27	05/11/22 04:05	1
13C5 PFNA	90		50 - 150	05/07/22 09:27	05/11/22 04:05	1
13C2 PFDA	96		50 - 150	05/07/22 09:27	05/11/22 04:05	1
13C2 PFUnA	96		50 - 150	05/07/22 09:27	05/11/22 04:05	1
13C2 PFDoA	97		50 - 150	05/07/22 09:27	05/11/22 04:05	1
13C2 PFTeDA	97		50 - 150	05/07/22 09:27	05/11/22 04:05	1
13C3 PFBS	109		50 - 150	05/07/22 09:27	05/11/22 04:05	1
18O2 PFHxS	99		50 - 150	05/07/22 09:27	05/11/22 04:05	1
13C4 PFOS	93		50 - 150	05/07/22 09:27	05/11/22 04:05	1
d3-NMeFOSAA	106		50 - 150	05/07/22 09:27	05/11/22 04:05	1
d5-NEtFOSAA	106		50 - 150	05/07/22 09:27	05/11/22 04:05	1
13C3 HFPO-DA	110		50 - 150	05/07/22 09:27	05/11/22 04:05	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

**Client Sample ID: MW-11 2-10**

**Lab Sample ID: 320-87432-1 6**

Date Collected: 04/28/22 09:12

Matrix: Water

Date Received: 05/03/22 15:30

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perf luorohexanoic acid (PFHxA)	1.6	J	1.8	0.53	ng/L		05/07/22 09:27	05/11/22 04:15	1
Perf luoroheptanoic acid (PFHpA)	1.8		1.8	0.23	ng/L		05/07/22 09:27	05/11/22 04:15	1
Perf luorooctanoic acid (PFOA)	2.2		1.8	0.77	ng/L		05/07/22 09:27	05/11/22 04:15	1
Perf luorononanoic acid (PFNA)	1.2	J	1.8	0.25	ng/L		05/07/22 09:27	05/11/22 04:15	1
Perf luorodecanoic acid (PFDA)	0.83	J	1.8	0.28	ng/L		05/07/22 09:27	05/11/22 04:15	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		05/07/22 09:27	05/11/22 04:15	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		05/07/22 09:27	05/11/22 04:15	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		05/07/22 09:27	05/11/22 04:15	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		05/07/22 09:27	05/11/22 04:15	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		05/07/22 09:27	05/11/22 04:15	1
Perf luorohexanesulfonic acid (PFHxS)	3.7		1.8	0.52	ng/L		05/07/22 09:27	05/11/22 04:15	1
Perf luorooctanesulfonic acid (PFOS)	12		1.8	0.49	ng/L		05/07/22 09:27	05/11/22 04:15	1
N-methylperfluorooctanesulfonamideacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		05/07/22 09:27	05/11/22 04:15	1
N-ethylperfluorooctanesulfonamideacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		05/07/22 09:27	05/11/22 04:15	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		05/07/22 09:27	05/11/22 04:15	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		05/07/22 09:27	05/11/22 04:15	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		05/07/22 09:27	05/11/22 04:15	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		05/07/22 09:27	05/11/22 04:15	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	78		50 - 150	05/07/22 09:27	05/11/22 04:15	1
13C4 PFHpA	81		50 - 150	05/07/22 09:27	05/11/22 04:15	1
13C4 PFOA	81		50 - 150	05/07/22 09:27	05/11/22 04:15	1
13C5 PFNA	80		50 - 150	05/07/22 09:27	05/11/22 04:15	1
13C2 PFDA	78		50 - 150	05/07/22 09:27	05/11/22 04:15	1
13C2 PFUnA	80		50 - 150	05/07/22 09:27	05/11/22 04:15	1
13C2 PFDoA	77		50 - 150	05/07/22 09:27	05/11/22 04:15	1
13C2 PFTeDA	72		50 - 150	05/07/22 09:27	05/11/22 04:15	1
13C3 PFBS	88		50 - 150	05/07/22 09:27	05/11/22 04:15	1
18O2 PFHxS	88		50 - 150	05/07/22 09:27	05/11/22 04:15	1
13C4 PFOS	71		50 - 150	05/07/22 09:27	05/11/22 04:15	1
d3-NMeFOSAA	78		50 - 150	05/07/22 09:27	05/11/22 04:15	1
d5-NEtFOSAA	80		50 - 150	05/07/22 09:27	05/11/22 04:15	1
13C3 HFPO-DA	79		50 - 150	05/07/22 09:27	05/11/22 04:15	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

**Client Sample ID: MW-12-10**

**Lab Sample ID: 320-87432-1 7**

Date Collected: 04/28/22 09:22

Matrix: Water

Date Received: 05/03/22 15:30

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perf luorohexanoic acid (PFHxA)	1.5	J	1.9	0.54	ng/L		05/07/22 09:27	05/11/22 04:26	1
Perf luoroheptanoic acid (PFHpA)	1.8	J	1.9	0.23	ng/L		05/07/22 09:27	05/11/22 04:26	1
Perf luorooctanoic acid (PFOA)	2.1		1.9	0.79	ng/L		05/07/22 09:27	05/11/22 04:26	1
Perf luorononanoic acid (PFNA)	1.2	J	1.9	0.25	ng/L		05/07/22 09:27	05/11/22 04:26	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		05/07/22 09:27	05/11/22 04:26	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		05/07/22 09:27	05/11/22 04:26	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		05/07/22 09:27	05/11/22 04:26	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		05/07/22 09:27	05/11/22 04:26	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		05/07/22 09:27	05/11/22 04:26	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		05/07/22 09:27	05/11/22 04:26	1
Perf luorohexanesulfonic acid (PFHxS)	3.7		1.9	0.53	ng/L		05/07/22 09:27	05/11/22 04:26	1
Perf luorooctanesulfonic acid (PFOS)	12		1.9	0.50	ng/L		05/07/22 09:27	05/11/22 04:26	1
N-methylperfluorooctanesulfonamideacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		05/07/22 09:27	05/11/22 04:26	1
N-ethylperfluorooctanesulfonamideacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		05/07/22 09:27	05/11/22 04:26	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		05/07/22 09:27	05/11/22 04:26	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		05/07/22 09:27	05/11/22 04:26	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		05/07/22 09:27	05/11/22 04:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		05/07/22 09:27	05/11/22 04:26	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	81		50 - 150	05/07/22 09:27	05/11/22 04:26	1
13C4 PFHpA	80		50 - 150	05/07/22 09:27	05/11/22 04:26	1
13C4 PFOA	84		50 - 150	05/07/22 09:27	05/11/22 04:26	1
13C5 PFNA	83		50 - 150	05/07/22 09:27	05/11/22 04:26	1
13C2 PFDA	80		50 - 150	05/07/22 09:27	05/11/22 04:26	1
13C2 PFUnA	82		50 - 150	05/07/22 09:27	05/11/22 04:26	1
13C2 PFDoA	78		50 - 150	05/07/22 09:27	05/11/22 04:26	1
13C2 PFTeDA	81		50 - 150	05/07/22 09:27	05/11/22 04:26	1
13C3 PFBS	82		50 - 150	05/07/22 09:27	05/11/22 04:26	1
18O2 PFHxS	83		50 - 150	05/07/22 09:27	05/11/22 04:26	1
13C4 PFOS	77		50 - 150	05/07/22 09:27	05/11/22 04:26	1
d3-NMeFOSAA	86		50 - 150	05/07/22 09:27	05/11/22 04:26	1
d5-NEtFOSAA	96		50 - 150	05/07/22 09:27	05/11/22 04:26	1
13C3 HFPO-DA	77		50 - 150	05/07/22 09:27	05/11/22 04:26	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

**Client Sample ID: EB-11 -1 5**

**Lab Sample ID: 320-87432-1 8**

**Date Collected: 04/28/22 14:00**

**Matrix: Water**

**Date Received: 05/03/22 15:30**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		05/07/22 09:27	05/11/22 04:36	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		05/07/22 09:27	05/11/22 04:36	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		05/07/22 09:27	05/11/22 04:36	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		05/07/22 09:27	05/11/22 04:36	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		05/07/22 09:27	05/11/22 04:36	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		05/07/22 09:27	05/11/22 04:36	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		05/07/22 09:27	05/11/22 04:36	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		05/07/22 09:27	05/11/22 04:36	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		05/07/22 09:27	05/11/22 04:36	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		05/07/22 09:27	05/11/22 04:36	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		05/07/22 09:27	05/11/22 04:36	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		05/07/22 09:27	05/11/22 04:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		05/07/22 09:27	05/11/22 04:36	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		05/07/22 09:27	05/11/22 04:36	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		05/07/22 09:27	05/11/22 04:36	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		05/07/22 09:27	05/11/22 04:36	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		05/07/22 09:27	05/11/22 04:36	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		05/07/22 09:27	05/11/22 04:36	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	77		50 - 150	05/07/22 09:27	05/11/22 04:36	1
13C4 PFHpA	79		50 - 150	05/07/22 09:27	05/11/22 04:36	1
13C4 PFOA	84		50 - 150	05/07/22 09:27	05/11/22 04:36	1
13C5 PFNA	79		50 - 150	05/07/22 09:27	05/11/22 04:36	1
13C2 PFDA	77		50 - 150	05/07/22 09:27	05/11/22 04:36	1
13C2 PFUnA	82		50 - 150	05/07/22 09:27	05/11/22 04:36	1
13C2 PFDoA	79		50 - 150	05/07/22 09:27	05/11/22 04:36	1
13C2 PFTeDA	82		50 - 150	05/07/22 09:27	05/11/22 04:36	1
13C3 PFBS	80		50 - 150	05/07/22 09:27	05/11/22 04:36	1
18O2 PFHxS	82		50 - 150	05/07/22 09:27	05/11/22 04:36	1
13C4 PFOS	74		50 - 150	05/07/22 09:27	05/11/22 04:36	1
d3-NMeFOSAA	83		50 - 150	05/07/22 09:27	05/11/22 04:36	1
d5-NEtFOSAA	87		50 - 150	05/07/22 09:27	05/11/22 04:36	1
13C3 HFPO-DA	74		50 - 150	05/07/22 09:27	05/11/22 04:36	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

**Client Sample ID: MW-11 -1 5**

**Lab Sample ID: 320-87432-1 9**

Date Collected: 04/28/22 11:21

Matrix: Water

Date Received: 05/03/22 15:30

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perf luorohexanoic acid (PFHxA)	13		1.9	0.54	ng/L		05/07/22 09:27	05/11/22 04:47	1
Perf luoroheptanoic acid (PFHpA)	5.8		1.9	0.23	ng/L		05/07/22 09:27	05/11/22 04:47	1
Perf luorooctanoic acid (PFOA)	5.9		1.9	0.79	ng/L		05/07/22 09:27	05/11/22 04:47	1
Perf luorononanoic acid (PFNA)	0.76	J I	1.9	0.25	ng/L		05/07/22 09:27	05/11/22 04:47	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		05/07/22 09:27	05/11/22 04:47	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		05/07/22 09:27	05/11/22 04:47	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		05/07/22 09:27	05/11/22 04:47	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		05/07/22 09:27	05/11/22 04:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		05/07/22 09:27	05/11/22 04:47	1
Perf luorobutanesulfonic acid (PFBS)	2.3		1.9	0.19	ng/L		05/07/22 09:27	05/11/22 04:47	1
Perf luorohexanesulfonic acid (PFHxS)	35		1.9	0.53	ng/L		05/07/22 09:27	05/11/22 04:47	1
Perf luorooctanesulfonic acid (PFOS)	170		1.9	0.50	ng/L		05/07/22 09:27	05/11/22 04:47	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		05/07/22 09:27	05/11/22 04:47	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		05/07/22 09:27	05/11/22 04:47	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		05/07/22 09:27	05/11/22 04:47	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		05/07/22 09:27	05/11/22 04:47	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		05/07/22 09:27	05/11/22 04:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		05/07/22 09:27	05/11/22 04:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		50 - 150	05/07/22 09:27	05/11/22 04:47	1
13C4 PFHpA	97		50 - 150	05/07/22 09:27	05/11/22 04:47	1
13C4 PFOA	95		50 - 150	05/07/22 09:27	05/11/22 04:47	1
13C5 PFNA	93		50 - 150	05/07/22 09:27	05/11/22 04:47	1
13C2 PFDA	95		50 - 150	05/07/22 09:27	05/11/22 04:47	1
13C2 PFUnA	95		50 - 150	05/07/22 09:27	05/11/22 04:47	1
13C2 PFDoA	87		50 - 150	05/07/22 09:27	05/11/22 04:47	1
13C2 PFTeDA	83		50 - 150	05/07/22 09:27	05/11/22 04:47	1
13C3 PFBS	98		50 - 150	05/07/22 09:27	05/11/22 04:47	1
18O2 PFHxS	98		50 - 150	05/07/22 09:27	05/11/22 04:47	1
13C4 PFOS	89		50 - 150	05/07/22 09:27	05/11/22 04:47	1
d3-NMeFOSAA	103		50 - 150	05/07/22 09:27	05/11/22 04:47	1
d5-NEtFOSAA	108		50 - 150	05/07/22 09:27	05/11/22 04:47	1
13C3 HFPO-DA	88		50 - 150	05/07/22 09:27	05/11/22 04:47	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

**Client Sample ID: GAC**

**Lab Sample ID: 320-87432-20**

**Date Collected: 04/29/22 10:45**

**Matrix: Water**

**Date Received: 05/03/22 15:30**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		05/07/22 09:27	05/11/22 04:57	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		05/07/22 09:27	05/11/22 04:57	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		05/07/22 09:27	05/11/22 04:57	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		05/07/22 09:27	05/11/22 04:57	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		05/07/22 09:27	05/11/22 04:57	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		05/07/22 09:27	05/11/22 04:57	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		05/07/22 09:27	05/11/22 04:57	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		05/07/22 09:27	05/11/22 04:57	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		05/07/22 09:27	05/11/22 04:57	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		05/07/22 09:27	05/11/22 04:57	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		05/07/22 09:27	05/11/22 04:57	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		05/07/22 09:27	05/11/22 04:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		05/07/22 09:27	05/11/22 04:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		05/07/22 09:27	05/11/22 04:57	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		05/07/22 09:27	05/11/22 04:57	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		05/07/22 09:27	05/11/22 04:57	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		05/07/22 09:27	05/11/22 04:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		05/07/22 09:27	05/11/22 04:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	85		50 - 150	05/07/22 09:27	05/11/22 04:57	1
13C4 PFHpA	89		50 - 150	05/07/22 09:27	05/11/22 04:57	1
13C4 PFOA	92		50 - 150	05/07/22 09:27	05/11/22 04:57	1
13C5 PFNA	89		50 - 150	05/07/22 09:27	05/11/22 04:57	1
13C2 PFDA	88		50 - 150	05/07/22 09:27	05/11/22 04:57	1
13C2 PFUnA	89		50 - 150	05/07/22 09:27	05/11/22 04:57	1
13C2 PFDoA	87		50 - 150	05/07/22 09:27	05/11/22 04:57	1
13C2 PFTeDA	82		50 - 150	05/07/22 09:27	05/11/22 04:57	1
13C3 PFBS	89		50 - 150	05/07/22 09:27	05/11/22 04:57	1
18O2 PFHxS	98		50 - 150	05/07/22 09:27	05/11/22 04:57	1
13C4 PFOS	87		50 - 150	05/07/22 09:27	05/11/22 04:57	1
d3-NMeFOSAA	100		50 - 150	05/07/22 09:27	05/11/22 04:57	1
d5-NEtFOSAA	104		50 - 150	05/07/22 09:27	05/11/22 04:57	1
13C3 HFPO-DA	86		50 - 150	05/07/22 09:27	05/11/22 04:57	1

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: GUS PFAS MW

Job ID: 320-87432-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
320-87432-1	MW-8-20	96	101	98	100	98	92	90	84
320-87432-2	MW-108-20	94	96	100	95	97	87	86	84
320-87432-3	MW-5-20	68	69	69	67	63	54	51	49 *5-
320-87432-4	MW-10-20	91	89	93	91	86	86	82	75
320-87432-5	MW-9-30	95	94	95	93	87	81	82	76
320-87432-6	MW-4-20	93	94	96	95	88	88	82	75
320-87432-7	MW-7-20	90	92	93	90	90	84	83	80
320-87432-8	MW-1-40	94	94	99	96	90	82	82	81
320-87432-9	MW-1-15	89	92	95	92	92	86	84	86
320-87432-10	MW-2-20	96	95	98	93	92	89	88	82
320-87432-11	MW-2-30	95	98	101	93	92	87	87	85
320-87432-12	MW-6-20	90	95	95	91	93	87	83	82
320-87432-13	MW-106-20	94	93	98	94	89	88	84	79
320-87432-14	MW-3-40	87	85	89	86	78	74	66	74
320-87432-15	MW-3-15	98	94	96	90	96	96	97	97
320-87432-16	MW-112-10	78	81	81	80	78	80	77	72
320-87432-17	MW-12-10	81	80	84	83	80	82	78	81
320-87432-18	EB-11-15	77	79	84	79	77	82	79	82
320-87432-19	MW-11-15	89	97	95	93	95	95	87	83
320-87432-20	GAC	85	89	92	89	88	89	87	82
LCS 320-586041/2-A	Lab Control Sample	96	102	99	97	101	95	95	90
LCSD 320-586041/3-A	Lab Control Sample Dup	98	100	100	94	95	95	95	86
MB 320-586041/1-A	Method Blank	97	99	99	99	90	89	90	89

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-87432-1	MW-8-20	102	100	94	86	92	90
320-87432-2	MW-108-20	98	99	86	84	86	89
320-87432-3	MW-5-20	73	68	63	55	51	67
320-87432-4	MW-10-20	97	94	82	82	80	91
320-87432-5	MW-9-30	89	93	84	83	78	86
320-87432-6	MW-4-20	98	100	85	85	82	92
320-87432-7	MW-7-20	93	93	83	87	84	81
320-87432-8	MW-1-40	101	98	87	81	87	85
320-87432-9	MW-1-15	92	92	81	90	92	89
320-87432-10	MW-2-20	98	96	87	90	89	92
320-87432-11	MW-2-30	99	99	88	88	88	91
320-87432-12	MW-6-20	99	98	87	87	84	88
320-87432-13	MW-106-20	99	95	82	86	82	89
320-87432-14	MW-3-40	87	93	83	82	86	83
320-87432-15	MW-3-15	109	99	93	106	106	110
320-87432-16	MW-112-10	88	88	71	78	80	79
320-87432-17	MW-12-10	82	83	77	86	96	77
320-87432-18	EB-11-15	80	82	74	83	87	74
320-87432-19	MW-11-15	98	98	89	103	108	88
320-87432-20	GAC	89	98	87	100	104	86
LCS 320-586041/2-A	Lab Control Sample	104	99	91	96	90	103
LCSD 320-586041/3-A	Lab Control Sample Dup	103	101	92	92	94	90
MB 320-586041/1-A	Method Blank	104	99	89	90	90	94

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# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

## Surrogate Legend

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PFHxA = 13C2 PFHxA  
C4PFHA = 13C4 PFHpA  
PFOA = 13C4 PFOA  
PFNA = 13C5 PFNA  
PFDA = 13C2 PFDA  
PFUnA = 13C2 PFUnA  
PFDoA = 13C2 PFDoA  
PFTDA = 13C2 PFTeDA  
C3PFBS = 13C3 PFBS  
PFHxS = 18O2 PFHxS  
PFOS = 13C4 PFOS  
d3NMFOS = d3-NMeFOSAA  
d5NEFOS = d5-NEtFOSAA  
HFPODA = 13C3 HFPO-DA

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-58041/ 1-A**  
**Matrix: Water**  
**Analysis Batch: 587698**

**Client Sample ID: Method Blank**  
**Prep Type: Total/ NA**  
**Prep Batch: 58041**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		05/07/22 09:27	05/13/22 19:34	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		05/07/22 09:27	05/13/22 19:34	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		05/07/22 09:27	05/13/22 19:34	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		05/07/22 09:27	05/13/22 19:34	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		05/07/22 09:27	05/13/22 19:34	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		05/07/22 09:27	05/13/22 19:34	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		05/07/22 09:27	05/13/22 19:34	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		05/07/22 09:27	05/13/22 19:34	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		05/07/22 09:27	05/13/22 19:34	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		05/07/22 09:27	05/13/22 19:34	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		05/07/22 09:27	05/13/22 19:34	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		05/07/22 09:27	05/13/22 19:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		05/07/22 09:27	05/13/22 19:34	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		05/07/22 09:27	05/13/22 19:34	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		05/07/22 09:27	05/13/22 19:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		05/07/22 09:27	05/13/22 19:34	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		05/07/22 09:27	05/13/22 19:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		05/07/22 09:27	05/13/22 19:34	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		50 - 150	05/07/22 09:27	05/13/22 19:34	1
13C4 PFHpA	99		50 - 150	05/07/22 09:27	05/13/22 19:34	1
13C4 PFOA	99		50 - 150	05/07/22 09:27	05/13/22 19:34	1
13C5 PFNA	99		50 - 150	05/07/22 09:27	05/13/22 19:34	1
13C2 PFDA	90		50 - 150	05/07/22 09:27	05/13/22 19:34	1
13C2 PFUnA	89		50 - 150	05/07/22 09:27	05/13/22 19:34	1
13C2 PFDoA	90		50 - 150	05/07/22 09:27	05/13/22 19:34	1
13C2 PFTeDA	89		50 - 150	05/07/22 09:27	05/13/22 19:34	1
13C3 PFBS	104		50 - 150	05/07/22 09:27	05/13/22 19:34	1
18O2 PFHxS	99		50 - 150	05/07/22 09:27	05/13/22 19:34	1
13C4 PFOS	89		50 - 150	05/07/22 09:27	05/13/22 19:34	1
d3-NMeFOSAA	90		50 - 150	05/07/22 09:27	05/13/22 19:34	1
d5-NEtFOSAA	90		50 - 150	05/07/22 09:27	05/13/22 19:34	1
13C3 HFPO-DA	94		50 - 150	05/07/22 09:27	05/13/22 19:34	1

**Lab Sample ID: LCS 320-586041/2-A**  
**Matrix: Water**  
**Analysis Batch: 587698**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/ NA**  
**Prep Batch: 58041**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	40.0	43.5		ng/L		109	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	40.0		ng/L		100	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	42.4		ng/L		106	71 - 133
Perfluorononanoic acid (PFNA)	40.0	42.9		ng/L		107	69 - 130

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-586041/2-A**  
**Matrix: Water**  
**Analysis Batch: 587698**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/ NA**  
**Prep Batch: 58041**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	38.0		ng/L		95	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	44.4		ng/L		111	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	40.1		ng/L		100	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	39.7		ng/L		99	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	40.3		ng/L		101	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	35.9		ng/L		102	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.8		ng/L		96	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	39.6		ng/L		107	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	38.5		ng/L		96	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.6		ng/L		99	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	39.7		ng/L		106	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	38.9		ng/L		97	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	41.9		ng/L		111	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	43.2		ng/L		115	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	96		50 - 150
13C4 PFHpA	102		50 - 150
13C4 PFOA	99		50 - 150
13C5 PFNA	97		50 - 150
13C2 PFDA	101		50 - 150
13C2 PFUnA	95		50 - 150
13C2 PFDoA	95		50 - 150
13C2 PFTeDA	90		50 - 150
13C3 PFBS	104		50 - 150
18O2 PFHxS	99		50 - 150
13C4 PFOS	91		50 - 150
d3-NMeFOSAA	96		50 - 150
d5-NEtFOSAA	90		50 - 150
13C3 HFPO-DA	103		50 - 150

**Lab Sample ID: LCSD 320-58041/3-A**  
**Matrix: Water**  
**Analysis Batch: 587698**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/ NA**  
**Prep Batch: 58041**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD
							Limits	RPD	
Perfluorohexanoic acid (PFHxA)	40.0	42.6		ng/L		107	72 - 129	2	30
Perfluoroheptanoic acid (PFHpA)	40.0	40.4		ng/L		101	72 - 130	1	30
Perfluorooctanoic acid (PFOA)	40.0	41.5		ng/L		104	71 - 133	2	30

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-58041/3-A**  
**Matrix: Water**  
**Analysis Batch: 587698**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/ NA**  
**Prep Batch: 58041**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	44.2		ng/L		111	69 - 130	3	30
Perfluorodecanoic acid (PFDA)	40.0	42.1		ng/L		105	71 - 129	10	30
Perfluoroundecanoic acid (PFUnA)	40.0	43.7		ng/L		109	69 - 133	2	30
Perfluorododecanoic acid (PFDoA)	40.0	40.5		ng/L		101	72 - 134	1	30
Perfluorotridecanoic acid (PFTriA)	40.0	40.0		ng/L		100	65 - 144	1	30
Perfluorotetradecanoic acid (PFTeA)	40.0	40.7		ng/L		102	71 - 132	1	30
Perfluorobutanesulfonic acid (PFBS)	35.4	36.9		ng/L		104	72 - 130	3	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.4		ng/L		94	68 - 131	1	30
Perfluorooctanesulfonic acid (PFOS)	37.1	38.0		ng/L		102	65 - 140	4	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	39.4		ng/L		99	65 - 136	2	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.4		ng/L		104	61 - 135	4	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	40.9		ng/L		110	77 - 137	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	44.1		ng/L		110	72 - 132	12	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	42.4		ng/L		112	76 - 136	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	45.3		ng/L		120	81 - 141	5	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	98		50 - 150
13C4 PFHpA	100		50 - 150
13C4 PFOA	100		50 - 150
13C5 PFNA	94		50 - 150
13C2 PFDA	95		50 - 150
13C2 PFUnA	95		50 - 150
13C2 PFDoA	95		50 - 150
13C2 PFTeDA	86		50 - 150
13C3 PFBS	103		50 - 150
18O2 PFHxS	101		50 - 150
13C4 PFOS	92		50 - 150
d3-NMeFOSAA	92		50 - 150
d5-NEtFOSAA	94		50 - 150
13C3 HFPO-DA	90		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

## LCMS

### Prep Batch: 586041

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-87432-1	MW-8-20	Total/NA	Water	3535	
320-87432-2	MW-108-20	Total/NA	Water	3535	
320-87432-3	MW-5-20	Total/NA	Water	3535	
320-87432-4	MW-10-20	Total/NA	Water	3535	
320-87432-5	MW-9-30	Total/NA	Water	3535	
320-87432-6	MW-4-20	Total/NA	Water	3535	
320-87432-7	MW-7-20	Total/NA	Water	3535	
320-87432-8	MW-1-40	Total/NA	Water	3535	
320-87432-9	MW-1-15	Total/NA	Water	3535	
320-87432-10	MW-2-20	Total/NA	Water	3535	
320-87432-11	MW-2-30	Total/NA	Water	3535	
320-87432-12	MW-6-20	Total/NA	Water	3535	
320-87432-13	MW-106-20	Total/NA	Water	3535	
320-87432-14	MW-3-40	Total/NA	Water	3535	
320-87432-15	MW-3-15	Total/NA	Water	3535	
320-87432-16	MW-112-10	Total/NA	Water	3535	
320-87432-17	MW-12-10	Total/NA	Water	3535	
320-87432-18	EB-11-15	Total/NA	Water	3535	
320-87432-19	MW-11-15	Total/NA	Water	3535	
320-87432-20	GAC	Total/NA	Water	3535	
MB 320-586041/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-586041/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-586041/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 586908

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-87432-14	MW-3-40	Total/NA	Water	EPA 537(Mod)	586041
320-87432-15	MW-3-15	Total/NA	Water	EPA 537(Mod)	586041
320-87432-16	MW-112-10	Total/NA	Water	EPA 537(Mod)	586041
320-87432-17	MW-12-10	Total/NA	Water	EPA 537(Mod)	586041
320-87432-18	EB-11-15	Total/NA	Water	EPA 537(Mod)	586041
320-87432-19	MW-11-15	Total/NA	Water	EPA 537(Mod)	586041
320-87432-20	GAC	Total/NA	Water	EPA 537(Mod)	586041

### Analysis Batch: 587698

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-87432-1	MW-8-20	Total/NA	Water	EPA 537(Mod)	586041
320-87432-2	MW-108-20	Total/NA	Water	EPA 537(Mod)	586041
320-87432-3	MW-5-20	Total/NA	Water	EPA 537(Mod)	586041
320-87432-4	MW-10-20	Total/NA	Water	EPA 537(Mod)	586041
320-87432-5	MW-9-30	Total/NA	Water	EPA 537(Mod)	586041
320-87432-6	MW-4-20	Total/NA	Water	EPA 537(Mod)	586041
320-87432-7	MW-7-20	Total/NA	Water	EPA 537(Mod)	586041
320-87432-8	MW-1-40	Total/NA	Water	EPA 537(Mod)	586041
320-87432-9	MW-1-15	Total/NA	Water	EPA 537(Mod)	586041
320-87432-10	MW-2-20	Total/NA	Water	EPA 537(Mod)	586041
320-87432-11	MW-2-30	Total/NA	Water	EPA 537(Mod)	586041
320-87432-12	MW-6-20	Total/NA	Water	EPA 537(Mod)	586041
320-87432-13	MW-106-20	Total/NA	Water	EPA 537(Mod)	586041
MB 320-586041/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	586041
LCS 320-586041/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	586041

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# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

## LCMS (Continued)

### Analysis Batch: 587698 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 320-586041/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	586041

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# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

**Client Sample ID: MW-8-20**

**Date Collected: 04/26/22 09:06**

**Date Received: 05/03/22 15:30**

**Lab Sample ID: 320-87432-1**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274.2 mL	10.0 mL	586041	05/07/22 09:27	KAA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587698	05/13/22 20:05	S1M	TAL SAC

**Client Sample ID: MW-108-20**

**Date Collected: 04/26/22 08:56**

**Date Received: 05/03/22 15:30**

**Lab Sample ID: 320-87432-2**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274.5 mL	10.0 mL	586041	05/07/22 09:27	KAA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587698	05/13/22 20:16	S1M	TAL SAC

**Client Sample ID: MW-5-20**

**Date Collected: 04/26/22 10:17**

**Date Received: 05/03/22 15:30**

**Lab Sample ID: 320-87432-3**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.4 mL	10.0 mL	586041	05/07/22 09:27	KAA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587698	05/13/22 20:26	S1M	TAL SAC

**Client Sample ID: MW-10-20**

**Date Collected: 04/26/22 11:11**

**Date Received: 05/03/22 15:30**

**Lab Sample ID: 320-87432-4**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269 mL	10.0 mL	586041	05/07/22 09:27	KAA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587698	05/13/22 20:37	S1M	TAL SAC

**Client Sample ID: MW-9-30**

**Date Collected: 04/26/22 12:27**

**Date Received: 05/03/22 15:30**

**Lab Sample ID: 320-87432-5**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			267.1 mL	10.0 mL	586041	05/07/22 09:27	KAA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587698	05/13/22 20:47	S1M	TAL SAC

**Client Sample ID: MW-4-20**

**Date Collected: 04/26/22 13:34**

**Date Received: 05/03/22 15:30**

**Lab Sample ID: 320-87432-6**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			260.7 mL	10.0 mL	586041	05/07/22 09:27	KAA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587698	05/13/22 20:57	S1M	TAL SAC

Eurofins Sacramento

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

## Client Sample ID: MW-7-20

Lab Sample ID: 320-87432-7

Date Collected: 04/26/22 14:49

Matrix: Water

Date Received: 05/03/22 15:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264.5 mL	10.0 mL	586041	05/07/22 09:27	KAA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587698	05/13/22 21:08	S1M	TAL SAC

## Client Sample ID: MW-1-40

Lab Sample ID: 320-87432-8

Date Collected: 04/26/22 15:52

Matrix: Water

Date Received: 05/03/22 15:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.1 mL	10.0 mL	586041	05/07/22 09:27	KAA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587698	05/13/22 21:39	S1M	TAL SAC

## Client Sample ID: MW-1-15

Lab Sample ID: 320-87432-9

Date Collected: 04/26/22 16:14

Matrix: Water

Date Received: 05/03/22 15:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268.6 mL	10.0 mL	586041	05/07/22 09:27	KAA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587698	05/13/22 21:49	S1M	TAL SAC

## Client Sample ID: MW-2-20

Lab Sample ID: 320-87432-10

Date Collected: 04/26/22 17:06

Matrix: Water

Date Received: 05/03/22 15:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			261.1 mL	10.0 mL	586041	05/07/22 09:27	KAA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587698	05/13/22 22:00	S1M	TAL SAC

## Client Sample ID: MW-2-30

Lab Sample ID: 320-87432-11

Date Collected: 04/26/22 17:39

Matrix: Water

Date Received: 05/03/22 15:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264 mL	10.0 mL	586041	05/07/22 09:27	KAA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587698	05/13/22 22:10	S1M	TAL SAC

## Client Sample ID: MW-6-20

Lab Sample ID: 320-87432-12

Date Collected: 04/27/22 09:35

Matrix: Water

Date Received: 05/03/22 15:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			261.9 mL	10.0 mL	586041	05/07/22 09:27	KAA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587698	05/13/22 22:21	S1M	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

**Client Sample ID: MW-106-20**

**Lab Sample ID: 320-87432-13**

Date Collected: 04/27/22 09:25

Matrix: Water

Date Received: 05/03/22 15:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.5 mL	10.0 mL	586041	05/07/22 09:27	KAA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			587698	05/13/22 22:31	S1M	TAL SAC

**Client Sample ID: MW-3-40**

**Lab Sample ID: 320-87432-14**

Date Collected: 04/27/22 11:24

Matrix: Water

Date Received: 05/03/22 15:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.1 mL	10.0 mL	586041	05/07/22 09:27	KAA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			586908	05/11/22 03:55	K1S	TAL SAC

**Client Sample ID: MW-3-15**

**Lab Sample ID: 320-87432-15**

Date Collected: 04/27/22 12:08

Matrix: Water

Date Received: 05/03/22 15:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.4 mL	10.0 mL	586041	05/07/22 09:27	KAA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			586908	05/11/22 04:05	K1S	TAL SAC

**Client Sample ID: MW-112-10**

**Lab Sample ID: 320-87432-16**

Date Collected: 04/28/22 09:12

Matrix: Water

Date Received: 05/03/22 15:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274.4 mL	10.0 mL	586041	05/07/22 09:27	KAA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			586908	05/11/22 04:15	K1S	TAL SAC

**Client Sample ID: MW-12-10**

**Lab Sample ID: 320-87432-17**

Date Collected: 04/28/22 09:22

Matrix: Water

Date Received: 05/03/22 15:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268.4 mL	10.0 mL	586041	05/07/22 09:27	KAA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			586908	05/11/22 04:26	K1S	TAL SAC

**Client Sample ID: EB-11-15**

**Lab Sample ID: 320-87432-18**

Date Collected: 04/28/22 14:00

Matrix: Water

Date Received: 05/03/22 15:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			272.8 mL	10.0 mL	586041	05/07/22 09:27	KAA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			586908	05/11/22 04:36	K1S	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

## Client Sample ID: MW-11-15

Lab Sample ID: 320-87432-19

Date Collected: 04/28/22 11:21

Matrix: Water

Date Received: 05/03/22 15:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			267.6 mL	10.0 mL	586041	05/07/22 09:27	KAA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			586908	05/11/22 04:47	K1S	TAL SAC

## Client Sample ID: GAC

Lab Sample ID: 320-87432-20

Date Collected: 04/29/22 10:45

Matrix: Water

Date Received: 05/03/22 15:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268.9 mL	10.0 mL	586041	05/07/22 09:27	KAA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			586908	05/11/22 04:57	K1S	TAL SAC

### Laboratory References:

TAL SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

## Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

1

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# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	TAL SAC TAL SAC

**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: GUS PFAS MW

Job ID: 320-87432-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-87432-1	MW-8-20	Water	04/26/22 09:06	05/03/22 15:30
320-87432-2	MW-108-20	Water	04/26/22 08:56	05/03/22 15:30
320-87432-3	MW-5-20	Water	04/26/22 10:17	05/03/22 15:30
320-87432-4	MW-10-20	Water	04/26/22 11:11	05/03/22 15:30
320-87432-5	MW-9-30	Water	04/26/22 12:27	05/03/22 15:30
320-87432-6	MW-4-20	Water	04/26/22 13:34	05/03/22 15:30
320-87432-7	MW-7-20	Water	04/26/22 14:49	05/03/22 15:30
320-87432-8	MW-1-40	Water	04/26/22 15:52	05/03/22 15:30
320-87432-9	MW-1-15	Water	04/26/22 16:14	05/03/22 15:30
320-87432-10	MW-2-20	Water	04/26/22 17:06	05/03/22 15:30
320-87432-11	MW-2-30	Water	04/26/22 17:39	05/03/22 15:30
320-87432-12	MW-6-20	Water	04/27/22 09:35	05/03/22 15:30
320-87432-13	MW-106-20	Water	04/27/22 09:25	05/03/22 15:30
320-87432-14	MW-3-40	Water	04/27/22 11:24	05/03/22 15:30
320-87432-15	MW-3-15	Water	04/27/22 12:08	05/03/22 15:30
320-87432-16	MW-112-10	Water	04/28/22 09:12	05/03/22 15:30
320-87432-17	MW-12-10	Water	04/28/22 09:22	05/03/22 15:30
320-87432-18	EB-11-15	Water	04/28/22 14:00	05/03/22 15:30
320-87432-19	MW-11-15	Water	04/28/22 11:21	05/03/22 15:30
320-87432-20	GAC	Water	04/29/22 10:45	05/03/22 15:30





2355 Hill Road  
Fairbanks, AK 99709  
(907) 479-0600  
www.shannonwilson.com

# CHAIN-OF-CUSTODY RECORD

Laboratory GETVIA Page 1 of 2  
Attn: D. ALBERK

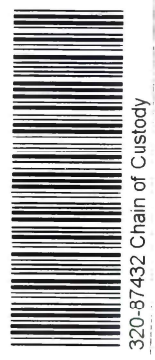
Analytical Methods (include preservative if used)

Quote No: \_\_\_\_\_

Turn Around Time:  
 Normal  Rush  
 Please Specify \_\_\_\_\_

J-Flags:  Yes  No

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-8-20	0906	4-26-22	X	2	60 containers
MW-108-20	0856	4-26-22	X	2	
MW-5-20	1017	4-26-22	X	2	
MW-10-20	1111	4-26-22	X	2	
MW-9-30	1227	4-26-22	X	2	
MW-4-20	1334	4-26-22	X	2	
MW-7-20	1449	4-26-22	X	2	
MW-1-40	1552	4-26-22	X	2	
MW-1-15	1614	4-26-22	X	2	
MW-2-20	1706	4-26-22	X	2	



Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Number: <u>102 S99-014</u>	Total No. of Containers: _____	Signature: _____	Signature: _____	Signature: _____
Name: <u>605 PEA3 MW</u>	COC Seals/Intact? Y/N/NA _____	Time: <u>1530</u>	Time: _____	Time: _____
Contact: <u>KRF</u>	Received Good Cond./Cold _____	Date: <u>4/26/22</u>	Date: _____	Date: _____
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Temp: _____	Printed Name: <u>A. Mastus</u>	Printed Name: _____	Printed Name: _____
Sampler: <u>MSC</u>	Delivery Method: _____	Company: <u>S&amp;W, INC</u>	Company: _____	Company: _____
Notes: _____		Received By: 1.	Received By: 2.	Received By: 3.
		Signature: _____	Signature: _____	Signature: _____
		Time: <u>1530</u>	Time: _____	Time: _____
		Printed Name: <u>Salvador Lopez</u>	Printed Name: _____	Printed Name: _____
		Date: <u>5-3-22</u>	Date: _____	Date: _____
		Company: _____	Company: _____	Company: _____

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file



# CHAIN-OF-CUSTODY RECORD

Laboratory GC TITRA  
 Attn: D. ALBERT

Analytical Methods (include preservative if use)

Quote No: \_\_\_\_\_

J-Flags:  Yes  No

Turn Around Time:  
 Normal  Rush

Please Specify \_\_\_\_\_

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-2-20		1734	4-26-22	X	
MW-6-20		0935	4-27-22	X	
MW-106-20		0925	4-27-22	X	
MW-3-40		1124	4-27-22	X	
MW-3-15		1208	4-27-22	X	
MW-112-10		0912	4/28/22	X	
MW-12-10		0922	4/28/22	X	
GB-11-15		1400	4/28/22	X	
MW-11-15		1121	4/28/22	X	
STAC		1045	4/29/22	X	

18 PRES  
 0005M S13  
 4/28/22

Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Number: _____ Name: _____ Contact: _____ Ongoing Project: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Sampler: <u>Paul A</u>	Total No. of Containers: _____ COC Seals/Intact? Y/N/NA: _____ Received Good Cond./Cold: _____ Delivery Method: _____	Signature: _____ Time: <u>1530</u> Date: <u>4/29/22</u> Printed Name: <u>A. MASTERS</u> Company: <u>SWW, Inc</u>	Signature: _____ Time: _____ Date: _____ Printed Name: _____ Company: _____	Signature: _____ Time: _____ Date: _____ Printed Name: _____ Company: _____
Notes:		Received By: 1.	Received By: 2.	Received By: 3.
		Signature: <u>Sally...</u> Time: <u>1530</u> Date: <u>5-3-22</u> Printed Name: _____ Company: _____		

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file

30's

No. 411863



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-87432-1

**Login Number: 87432**

**List Source: Eurofins Sacramento**

**List Number: 1**

**Creator: Oropeza, Salvador**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	seals
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Laboratory Data Review Checklist

Completed By:

Mason Craker

Title:

Geologist

Date:

May 24, 2022

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins TestAmerica

Laboratory Report Number:

320-87432-1

Laboratory Report Date:

May 23, 2022

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

Laboratory Report Date:

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all the submitted sample analyses?

Yes  No  N/A  Comments:

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

Laboratory Report Date:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes  No  N/A  Comments:

No discrepancies were noted.

- e. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

#### 4. Case Narrative

- a. Present and understandable?

Yes  No  N/A  Comments:

- b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

- Method EPA 537(Mod): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: MW-5-20 (320-87432-3). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s).
- Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte.
- Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate associated with prep batch 320-586041
- The laboratory also noted observations during the sample prep (clogged extraction columns, colored extracts, particulates, etc.).

- c. Were all corrective actions documented?

Yes  No  N/A  Comments:

- d. What is the effect on data quality/usability according to the case narrative?

Comments:

Our assessment of the data quality and usability is described in the sections below.

Laboratory Report Date:

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

--

b. All applicable holding times met?

Yes  No  N/A  Comments:

--

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

--

e. Data quality or usability affected?

The data quality and/or usability was not affected; see above.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

--

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

--

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/a, see above.

Laboratory Report Date:

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

v. Data quality or usability affected?

Comments:

Data quality and usability are not affected. See above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A  Comments:

LCS/LCSD samples were analyzed for the requested analyses.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; %R and RPD were within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

N/A; see above.

Laboratory Report Date:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and usability were not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

No MS/MSD samples were reported for the requested analyses. The laboratory analyzed LCS and LCSD samples to assess laboratory accuracy and precision for all requested analyses.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

No MS/MSD were reported with this work order.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A  Comments:

No MS/MSD were reported with this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

No MS/MSD were reported with this work order. Analytical accuracy and precision are demonstrated by the LCS/LCSD.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.



Laboratory Report Date:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes  No  N/A  Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A  Comments:IDA 13C2-PFTDA for sample *MW-5-20* is reported below the laboratory limits.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

The associated analyte was not detected in the project sample. A 'UJ' flag has been applied to this analyte, with no direction of bias.

iv. Data quality or usability affected?

Comments:

The data quality was affected; see above. The data usability was not affected, as the datum is usable with the appropriate flag.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes  No  N/A  Comments:

Trip blanks are not collected for PFAS analysis.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

See above.

iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

Laboratory Report Date:

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

See above.

v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

ii. Submitted blind to lab?

Yes  No  N/A  Comments:The field duplicate pairs are *MW-12-10/MW-112-10*, *MW-6-20/MW-106-20*, and *MW-8-20/MW-108-20*.iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration $R_2$  = Field Duplicate ConcentrationYes  No  N/A  Comments:RPDs are calculated for detectable results above the RL. We note the PFOS result for samples *MW-6-20* and *MW-106-20* had an RPD above 30%; however, PFOS was detected at estimated concentrations below the RL and the results are already flagged with a “J” to denote imprecision. No further flagging has been applied.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and/or usability was not affected; see above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

An equipment blank was submitted; none of the requested analytes were detected.

Laboratory Report Date:

i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

iii. Data quality or usability affected?

Comments:

Data quality and usability are not affected, see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A  Comments:

The laboratory applied an "I" flag to indicate the transition mass ratio was reported above the established limits. A "J" flag has been applied to the reported concentration for PFNA for sample *MW-11-15* to indicate the result is estimated.



## Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks  
2355 Hill Rd.  
Fairbanks, AK 99701  
(907)479-0600

Report Number: **1215590**

Client Project: **102599-012 GST MWs**

Dear Kristen Freiburger,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jennifer at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

---

Jennifer Dawkins  
Project Manager  
Jennifer.Dawkins@sgs.com

Date

## Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**

SGS Project: **1215590**

Project Name/Site: **102599-012 GST MWs**

Project Contact: **Kristen Freiburger**

Refer to sample receipt form for information on sample condition.

### **1215582006MS (1633499) MS**

8270D SIM - PAH MS recoveries for multiple analytes do not meet QC criteria. Refer to the LCS for accuracy requirements.

8270D SIM - PAH surrogate recovery for fluoranthene-d10 does not meet QC criteria.

### **1215582006MSD (1633500) MSD**

8270D SIM - PAH surrogate recoveries for 2-methylnaphthalene-d10 and fluoranthene-d10 do not meet QC criteria.

8270D SIM - PAH MSD recoveries for multiple analytes do not meet QC criteria. Refer to the LCS for accuracy requirements.

\*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 09/21/2021 8:35:40AM

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
MW-11-15	1215590001	08/27/2021	08/31/2021	Water (Surface, Eff., Ground)
MW-12-10	1215590002	08/27/2021	08/31/2021	Water (Surface, Eff., Ground)
MW-112-10	1215590003	08/27/2021	08/31/2021	Water (Surface, Eff., Ground)
Trip Blank	1215590004	08/27/2021	08/31/2021	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
8270D SIM LV (PAH)	8270 PAH SIM GC/MS LV
AK101	AK101/8021 Combo.
SW8021B	AK101/8021 Combo.
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water

Print Date: 09/21/2021 8:35:44AM

## Detectable Results Summary

Client Sample ID: **MW-11-15**

Lab Sample ID: 1215590001

### Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.231J	mg/L
Residual Range Organics	0.278J	mg/L

Print Date: 09/21/2021 8:35:45AM





Results of MW-11-15

Client Sample ID: MW-11-15
Client Project ID: 102599-012 GST MWs
Lab Sample ID: 1215590001
Lab Project ID: 1215590

Collection Date: 08/27/21 09:25
Received Date: 08/31/21 09:49
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS12878
Analytical Method: 8270D SIM LV (PAH)
Analyst: LAW
Analytical Date/Time: 09/10/21 21:48
Container ID: 1215590001-A

Prep Batch: XXX45485
Prep Method: SW3535A
Prep Date/Time: 09/01/21 01:30
Prep Initial Wt./Vol.: 275 mL
Prep Extract Vol: 1 mL



Results of MW-11-15

Client Sample ID: MW-11-15
Client Project ID: 102599-012 GST MWs
Lab Sample ID: 1215590001
Lab Project ID: 1215590

Collection Date: 08/27/21 09:25
Received Date: 08/31/21 09:49
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC16077
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 09/08/21 16:02
Container ID: 1215590001-C

Prep Batch: XXX45522
Prep Method: SW3520C
Prep Date/Time: 09/07/21 15:30
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC16077
Analytical Method: AK103
Analyst: IVM
Analytical Date/Time: 09/08/21 16:02
Container ID: 1215590001-C

Prep Batch: XXX45522
Prep Method: SW3520C
Prep Date/Time: 09/07/21 15:30
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL



Results of MW-11-15

Client Sample ID: MW-11-15
Client Project ID: 102599-012 GST MWs
Lab Sample ID: 1215590001
Lab Project ID: 1215590

Collection Date: 08/27/21 09:25
Received Date: 08/31/21 09:49
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Gasoline Range Organics, 0.0500 U, 0.100, 0.0450, mg/L, 1, 09/03/21 02:14

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 4-Bromofluorobenzene (surr), 81.9, 50-150, %, 1, 09/03/21 02:14

Batch Information

Analytical Batch: VFC15792
Analytical Method: AK101
Analyst: MDT
Analytical Date/Time: 09/03/21 02:14
Container ID: 1215590001-E

Prep Batch: VXX37762
Prep Method: SW5030B
Prep Date/Time: 09/02/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows: Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, Xylenes (total)

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 1,4-Difluorobenzene (surr), 90, 77-115, %, 1, 09/03/21 02:14

Batch Information

Analytical Batch: VFC15792
Analytical Method: SW8021B
Analyst: MDT
Analytical Date/Time: 09/03/21 02:14
Container ID: 1215590001-E

Prep Batch: VXX37762
Prep Method: SW5030B
Prep Date/Time: 09/02/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



**Results of MW-12-10**

Client Sample ID: **MW-12-10**  
 Client Project ID: **102599-012 GST MWs**  
 Lab Sample ID: 1215590002  
 Lab Project ID: 1215590

Collection Date: 08/27/21 10:34  
 Received Date: 08/31/21 09:49  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	0.0227 U	0.0455	0.0136	ug/L	1		09/10/21 22:09
2-Methylnaphthalene	0.0227 U	0.0455	0.0136	ug/L	1		09/10/21 22:09
Acenaphthene	0.0227 U	0.0455	0.0136	ug/L	1		09/10/21 22:09
Acenaphthylene	0.0227 U	0.0455	0.0136	ug/L	1		09/10/21 22:09
Anthracene	0.0227 U	0.0455	0.0136	ug/L	1		09/10/21 22:09
Benzo(a)Anthracene	0.0227 U	0.0455	0.0136	ug/L	1		09/10/21 22:09
Benzo[a]pyrene	0.00910 U	0.0182	0.00564	ug/L	1		09/10/21 22:09
Benzo[b]Fluoranthene	0.0227 U	0.0455	0.0136	ug/L	1		09/10/21 22:09
Benzo[g,h,i]perylene	0.0227 U	0.0455	0.0136	ug/L	1		09/10/21 22:09
Benzo[k]fluoranthene	0.0227 U	0.0455	0.0136	ug/L	1		09/10/21 22:09
Chrysene	0.0227 U	0.0455	0.0136	ug/L	1		09/10/21 22:09
Dibenzo[a,h]anthracene	0.00910 U	0.0182	0.00564	ug/L	1		09/10/21 22:09
Fluoranthene	0.0227 U	0.0455	0.0136	ug/L	1		09/10/21 22:09
Fluorene	0.0227 U	0.0455	0.0136	ug/L	1		09/10/21 22:09
Indeno[1,2,3-c,d] pyrene	0.0227 U	0.0455	0.0136	ug/L	1		09/10/21 22:09
Naphthalene	0.0454 U	0.0909	0.0282	ug/L	1		09/10/21 22:09
Phenanthrene	0.0227 U	0.0455	0.0136	ug/L	1		09/10/21 22:09
Pyrene	0.0227 U	0.0455	0.0136	ug/L	1		09/10/21 22:09
<b>Surrogates</b>							
2-Methylnaphthalene-d10 (surr)	54.3	42-86		%	1		09/10/21 22:09
Fluoranthene-d10 (surr)	68.2	50-97		%	1		09/10/21 22:09

**Batch Information**

Analytical Batch: XMS12878  
 Analytical Method: 8270D SIM LV (PAH)  
 Analyst: LAW  
 Analytical Date/Time: 09/10/21 22:09  
 Container ID: 1215590002-A

Prep Batch: XXX45485  
 Prep Method: SW3535A  
 Prep Date/Time: 09/01/21 01:30  
 Prep Initial Wt./Vol.: 275 mL  
 Prep Extract Vol: 1 mL



Results of MW-12-10

Client Sample ID: MW-12-10
Client Project ID: 102599-012 GST MWs
Lab Sample ID: 1215590002
Lab Project ID: 1215590

Collection Date: 08/27/21 10:34
Received Date: 08/31/21 09:49
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Diesel Range Organics, 0.278 U, 0.556, 0.185, mg/L, 1, 09/08/21 16:12

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 5a Androstane (surr), 89.5, 50-150, %, 1, 09/08/21 16:12

Batch Information

Analytical Batch: XFC16077
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 09/08/21 16:12
Container ID: 1215590002-C

Prep Batch: XXX45522
Prep Method: SW3520C
Prep Date/Time: 09/07/21 15:30
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Residual Range Organics, 0.232 U, 0.463, 0.185, mg/L, 1, 09/08/21 16:12

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: n-Triacontane-d62 (surr), 93.4, 50-150, %, 1, 09/08/21 16:12

Batch Information

Analytical Batch: XFC16077
Analytical Method: AK103
Analyst: IVM
Analytical Date/Time: 09/08/21 16:12
Container ID: 1215590002-C

Prep Batch: XXX45522
Prep Method: SW3520C
Prep Date/Time: 09/07/21 15:30
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL



Results of MW-12-10

Client Sample ID: MW-12-10
Client Project ID: 102599-012 GST MWs
Lab Sample ID: 1215590002
Lab Project ID: 1215590

Collection Date: 08/27/21 10:34
Received Date: 08/31/21 09:49
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Gasoline Range Organics, 0.0500 U, 0.100, 0.0450, mg/L, 1, 09/03/21 02:50

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 4-Bromofluorobenzene (surr), 78.6, 50-150, %, 1, 09/03/21 02:50

Batch Information

Analytical Batch: VFC15792
Analytical Method: AK101
Analyst: MDT
Analytical Date/Time: 09/03/21 02:50
Container ID: 1215590002-E

Prep Batch: VXX37762
Prep Method: SW5030B
Prep Date/Time: 09/02/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows: Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, Xylenes (total)

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 1,4-Difluorobenzene (surr), 90, 77-115, %, 1, 09/03/21 02:50

Batch Information

Analytical Batch: VFC15792
Analytical Method: SW8021B
Analyst: MDT
Analytical Date/Time: 09/03/21 02:50
Container ID: 1215590002-E

Prep Batch: VXX37762
Prep Method: SW5030B
Prep Date/Time: 09/02/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of MW-112-10

Client Sample ID: MW-112-10
Client Project ID: 102599-012 GST MWs
Lab Sample ID: 1215590003
Lab Project ID: 1215590

Collection Date: 08/27/21 10:24
Received Date: 08/31/21 09:49
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS12878
Analytical Method: 8270D SIM LV (PAH)
Analyst: LAW
Analytical Date/Time: 09/10/21 22:29
Container ID: 1215590003-A

Prep Batch: XXX45485
Prep Method: SW3535A
Prep Date/Time: 09/01/21 01:30
Prep Initial Wt./Vol.: 275 mL
Prep Extract Vol: 1 mL



Results of MW-112-10

Client Sample ID: MW-112-10
Client Project ID: 102599-012 GST MWs
Lab Sample ID: 1215590003
Lab Project ID: 1215590

Collection Date: 08/27/21 10:24
Received Date: 08/31/21 09:49
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC16077
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 09/08/21 16:21
Container ID: 1215590003-C

Prep Batch: XXX45522
Prep Method: SW3520C
Prep Date/Time: 09/07/21 15:30
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC16077
Analytical Method: AK103
Analyst: IVM
Analytical Date/Time: 09/08/21 16:21
Container ID: 1215590003-C

Prep Batch: XXX45522
Prep Method: SW3520C
Prep Date/Time: 09/07/21 15:30
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL





Results of MW-112-10

Client Sample ID: MW-112-10
Client Project ID: 102599-012 GST MWs
Lab Sample ID: 1215590003
Lab Project ID: 1215590

Collection Date: 08/27/21 10:24
Received Date: 08/31/21 09:49
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Gasoline Range Organics, 0.0500 U, 0.100, 0.0450, mg/L, 1, 09/03/21 03:26

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 4-Bromofluorobenzene (surr), 80.5, 50-150, %, 1, 09/03/21 03:26

Batch Information

Analytical Batch: VFC15792
Analytical Method: AK101
Analyst: MDT
Analytical Date/Time: 09/03/21 03:26
Container ID: 1215590003-E

Prep Batch: VXX37762
Prep Method: SW5030B
Prep Date/Time: 09/02/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows: Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, Xylenes (total)

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 1,4-Difluorobenzene (surr), 90.2, 77-115, %, 1, 09/03/21 03:26

Batch Information

Analytical Batch: VFC15792
Analytical Method: SW8021B
Analyst: MDT
Analytical Date/Time: 09/03/21 03:26
Container ID: 1215590003-E

Prep Batch: VXX37762
Prep Method: SW5030B
Prep Date/Time: 09/02/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



**Results of Trip Blank**

Client Sample ID: **Trip Blank**  
Client Project ID: **102599-012 GST MWs**  
Lab Sample ID: 1215590004  
Lab Project ID: 1215590

Collection Date: 08/27/21 09:25  
Received Date: 08/31/21 09:49  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Volatile Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0450	mg/L	1		09/02/21 21:42

**Surrogates**

4-Bromofluorobenzene (surr)	87.5	50-150		%	1		09/02/21 21:42
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**Batch Information**

Analytical Batch: VFC15792  
Analytical Method: AK101  
Analyst: MDT  
Analytical Date/Time: 09/02/21 21:42  
Container ID: 1215590004-A

Prep Batch: VXX37762  
Prep Method: SW5030B  
Prep Date/Time: 09/02/21 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.250 U	0.500	0.150	ug/L	1		09/02/21 21:42
Ethylbenzene	0.500 U	1.00	0.500	ug/L	1		09/02/21 21:42
o-Xylene	0.500 U	1.00	0.500	ug/L	1		09/02/21 21:42
P & M -Xylene	1.00 U	2.00	0.900	ug/L	1		09/02/21 21:42
Toluene	0.500 U	1.00	0.500	ug/L	1		09/02/21 21:42
Xylenes (total)	1.50 U	3.00	1.40	ug/L	1		09/02/21 21:42

**Surrogates**

1,4-Difluorobenzene (surr)	90.2	77-115		%	1		09/02/21 21:42
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**Batch Information**

Analytical Batch: VFC15792  
Analytical Method: SW8021B  
Analyst: MDT  
Analytical Date/Time: 09/02/21 21:42  
Container ID: 1215590004-A

Prep Batch: VXX37762  
Prep Method: SW5030B  
Prep Date/Time: 09/02/21 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



### Method Blank

Blank ID: MB for HBN 1825062 [VXX/37762]  
Blank Lab ID: 1634139

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1215590001, 1215590002, 1215590003, 1215590004

### Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0450	mg/L
<b>Surrogates</b>				
4-Bromofluorobenzene (surr)	90.3	50-150		%

### Batch Information

Analytical Batch: VFC15792  
Analytical Method: AK101  
Instrument: Agilent 7890 PID/FID  
Analyst: MDT  
Analytical Date/Time: 9/2/2021 10:54:00AM

Prep Batch: VXX37762  
Prep Method: SW5030B  
Prep Date/Time: 9/2/2021 6:00:00AM  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/21/2021 8:35:49AM



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1215590 [VXX37762]  
 Blank Spike Lab ID: 1634142  
 Date Analyzed: 09/02/2021 11:48

Spike Duplicate ID: LCSD for HBN 1215590 [VXX37762]  
 Spike Duplicate Lab ID: 1634143  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1215590001, 1215590002, 1215590003, 1215590004

### Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.943	94	1.00	0.974	97	( 60-120 )	3.20	(< 20 )

### Surrogates

4-Bromofluorobenzene (surr)	0.0500		95	0.0500		97	( 50-150 )	1.90	
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### Batch Information

Analytical Batch: **VFC15792**  
 Analytical Method: **AK101**  
 Instrument: **Agilent 7890 PID/FID**  
 Analyst: **MDT**

Prep Batch: **VXX37762**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **09/02/2021 06:00**  
 Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 09/21/2021 8:35:51AM



### Method Blank

Blank ID: MB for HBN 1825062 [VXX/37762]  
Blank Lab ID: 1634139

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1215590001, 1215590002, 1215590003, 1215590004

### Results by SW8021B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.250U	0.500	0.150	ug/L
Ethylbenzene	0.500U	1.00	0.500	ug/L
o-Xylene	0.500U	1.00	0.500	ug/L
P & M -Xylene	1.00U	2.00	0.900	ug/L
Toluene	0.500U	1.00	0.500	ug/L
Xylenes (total)	1.50U	3.00	1.40	ug/L
<b>Surrogates</b>				
1,4-Difluorobenzene (surr)	90.6	77-115		%

### Batch Information

Analytical Batch: VFC15792  
Analytical Method: SW8021B  
Instrument: Agilent 7890 PID/FID  
Analyst: MDT  
Analytical Date/Time: 9/2/2021 10:54:00AM

Prep Batch: VXX37762  
Prep Method: SW5030B  
Prep Date/Time: 9/2/2021 6:00:00AM  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/21/2021 8:35:53AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1215590 [VXX37762]  
 Blank Spike Lab ID: 1634140  
 Date Analyzed: 09/02/2021 11:30

Spike Duplicate ID: LCSD for HBN 1215590 [VXX37762]  
 Spike Duplicate Lab ID: 1634141  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1215590001, 1215590002, 1215590003, 1215590004

## Results by SW8021B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	100	102	102	100	112	112	( 80-120 )	10.00	(< 20 )
Ethylbenzene	100	92.9	93	100	104	104	( 75-125 )	11.40	(< 20 )
o-Xylene	100	88.8	89	100	99.9	100	( 80-120 )	11.80	(< 20 )
P & M -Xylene	200	183	92	200	206	103	( 75-130 )	11.50	(< 20 )
Toluene	100	96.5	97	100	108	108	( 75-120 )	11.40	(< 20 )
Xylenes (total)	300	272	91	300	305	102	( 79-121 )	11.60	(< 20 )

## Surrogates

1,4-Difluorobenzene (surr)	50		101	50		105	( 77-115 )	3.50	
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## Batch Information

Analytical Batch: **VFC15792**  
 Analytical Method: **SW8021B**  
 Instrument: **Agilent 7890 PID/FID**  
 Analyst: **MDT**

Prep Batch: **VXX37762**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **09/02/2021 06:00**  
 Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL



**Method Blank**

Blank ID: MB for HBN 1824913 [XXX/45485]  
Blank Lab ID: 1633497

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1215590001, 1215590002, 1215590003

**Results by 8270D SIM LV (PAH)**

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0205J	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
<b>Surrogates</b>				
2-Methylnaphthalene-d10 (surr)	51.5	42-86		%
Fluoranthene-d10 (surr)	63.8	50-97		%

**Batch Information**

Analytical Batch: XMS12878  
Analytical Method: 8270D SIM LV (PAH)  
Instrument: SVA Agilent 780/5975 GC/MS  
Analyst: LAW  
Analytical Date/Time: 9/10/2021 2:30:00PM

Prep Batch: XXX45485  
Prep Method: SW3535A  
Prep Date/Time: 9/1/2021 1:30:44AM  
Prep Initial Wt./Vol.: 250 mL  
Prep Extract Vol: 1 mL

Print Date: 09/21/2021 8:35:58AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1215590 [XXX45485]

Blank Spike Lab ID: 1633498

Date Analyzed: 09/10/2021 14:51

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1215590001, 1215590002, 1215590003

## Results by 8270D SIM LV (PAH)

### Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
1-Methylnaphthalene	2	1.13	57	(41-115)
2-Methylnaphthalene	2	1.12	56	(39-114)
Acenaphthene	2	1.25	62	(48-114)
Acenaphthylene	2	1.29	65	(35-121)
Anthracene	2	1.25	63	(53-119)
Benzo(a)Anthracene	2	1.29	65	(59-120)
Benzo[a]pyrene	2	1.23	61	(53-120)
Benzo[b]Fluoranthene	2	1.24	62	(53-126)
Benzo[g,h,i]perylene	2	1.28	64	(44-128)
Benzo[k]fluoranthene	2	1.28	64	(54-125)
Chrysene	2	1.28	64	(57-120)
Dibenzo[a,h]anthracene	2	1.27	64	(44-131)
Fluoranthene	2	1.24	62	(58-120)
Fluorene	2	1.27	64	(50-118)
Indeno[1,2,3-c,d] pyrene	2	1.26	63	(48-130)
Naphthalene	2	1.17	59	(43-114)
Phenanthrene	2	1.28	64	(53-115)
Pyrene	2	1.25	62	(53-121)

### Surrogates

2-Methylnaphthalene-d10 (surr)	2		51	(42-86)
Fluoranthene-d10 (surr)	2		59	(50-97)

## Batch Information

Analytical Batch: XMS12878

Analytical Method: 8270D SIM LV (PAH)

Instrument: SVA Agilent 780/5975 GC/MS

Analyst: LAW

Prep Batch: XXX45485

Prep Method: SW3535A

Prep Date/Time: 09/01/2021 01:30

Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Dupe Init Wt./Vol.: Extract Vol:

Print Date: 09/21/2021 8:36:01AM





### Matrix Spike Summary

Original Sample ID: 1215582006  
 MS Sample ID: 1633499 MS  
 MSD Sample ID: 1633500 MSD

Analysis Date: 09/10/2021 19:45  
 Analysis Date: 09/10/2021 20:06  
 Analysis Date: 09/10/2021 20:26  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1215590001, 1215590002, 1215590003

### Results by 8270D SIM LV (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD_CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0236U	1.92	.93	48	1.92	0.858	45 *	48-114	8.00	(< 20)
Acenaphthylene	0.0236U	1.92	.968	50	1.92	0.919	48	35-121	5.20	(< 20)
Anthracene	0.0236U	1.92	.812	42 *	1.92	0.738	38 *	53-119	9.40	(< 20)
Benzo(a)Anthracene	0.0236U	1.92	.767	40 *	1.92	0.708	37 *	59-120	8.00	(< 20)
Benzo[a]pyrene	0.00945U	1.92	.717	37 *	1.92	0.653	34 *	53-120	9.20	(< 20)
Benzo[b]Fluoranthene	0.0236U	1.92	.752	39 *	1.92	0.680	35 *	53-126	10.10	(< 20)
Benzo[g,h,i]perylene	0.0264J	1.92	.704	35 *	1.92	0.640	32 *	44-128	9.50	(< 20)
Benzo[k]fluoranthene	0.0236U	1.92	.713	37 *	1.92	0.667	35 *	54-125	6.60	(< 20)
Chrysene	0.0186J	1.92	.774	39 *	1.92	0.721	37 *	57-120	7.00	(< 20)
Dibenzo[a,h]anthracene	0.00945U	1.92	.702	37 *	1.92	0.640	33 *	44-131	9.20	(< 20)
Fluoranthene	0.0432J	1.92	.79	39 *	1.92	0.723	35 *	58-120	8.90	(< 20)
Fluorene	0.0236U	1.92	.894	47 *	1.92	0.828	43 *	50-118	7.70	(< 20)
Indeno[1,2,3-c,d] pyrene	0.0236U	1.92	.686	36 *	1.92	0.615	32 *	48-130	10.80	(< 20)
Naphthalene	0.0471U	1.92	.981	51	1.92	0.906	47	43-114	7.90	(< 20)
Phenanthrene	0.0322J	1.92	.866	43 *	1.92	0.790	39 *	53-115	9.20	(< 20)
Pyrene	0.0455J	1.92	.797	39 *	1.92	0.733	36 *	53-121	8.50	(< 20)
<b>Surrogates</b>										
2-Methylnaphthalene-d10 (surr)		1.92	.844	44	1.92	0.702	37 *	42-86	18.40	
Fluoranthene-d10 (surr)		1.92	.718	37 *	1.92	0.670	35 *	50-97	7.00	

### Batch Information

Analytical Batch: XMS12878  
 Analytical Method: 8270D SIM LV (PAH)  
 Instrument: SVA Agilent 780/5975 GC/MS  
 Analyst: LAW  
 Analytical Date/Time: 9/10/2021 8:06:00PM

Prep Batch: XXX45485  
 Prep Method: 3535 Solid Phase Ext for 8270 PAH SIM LV  
 Prep Date/Time: 9/1/2021 1:30:44AM  
 Prep Initial Wt./Vol.: 260.00mL  
 Prep Extract Vol: 1.00mL

Print Date: 09/21/2021 8:36:03AM

## Method Blank

Blank ID: MB for HBN 1825187 [XXX/45522]  
Blank Lab ID: 1634821

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1215590001, 1215590002, 1215590003

## Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.300U	0.600	0.200	mg/L
<b>Surrogates</b>				
5a Androstane (surr)	91.7	60-120		%

## Batch Information

Analytical Batch: XFC16077  
Analytical Method: AK102  
Instrument: Agilent 7890B R  
Analyst: IVM  
Analytical Date/Time: 9/8/2021 2:43:00PM

Prep Batch: XXX45522  
Prep Method: SW3520C  
Prep Date/Time: 9/7/2021 3:30:28PM  
Prep Initial Wt./Vol.: 250 mL  
Prep Extract Vol: 1 mL

Print Date: 09/21/2021 8:36:04AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1215590 [XXX45522]  
 Blank Spike Lab ID: 1634822  
 Date Analyzed: 09/08/2021 14:52

Spike Duplicate ID: LCSD for HBN 1215590 [XXX45522]  
 Spike Duplicate Lab ID: 1634823  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1215590001, 1215590002, 1215590003

## Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	21.0	105	20	17.6	88	( 75-125 )	17.40	(< 20 )

### Surrogates

5a Androstane (surr)	0.4		114	0.4		98	( 60-120 )	15.10	
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## Batch Information

Analytical Batch: **XFC16077**  
 Analytical Method: **AK102**  
 Instrument: **Agilent 7890B R**  
 Analyst: **IVM**

Prep Batch: **XXX45522**  
 Prep Method: **SW3520C**  
 Prep Date/Time: **09/07/2021 15:30**  
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Print Date: 09/21/2021 8:36:07AM



**Method Blank**

Blank ID: MB for HBN 1825187 [XXX/45522]  
Blank Lab ID: 1634821

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1215590001, 1215590002, 1215590003

**Results by AK103**

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	0.250U	0.500	0.200	mg/L
<b>Surrogates</b>				
n-Triacontane-d62 (surr)	99.5	60-120		%

**Batch Information**

Analytical Batch: XFC16077  
Analytical Method: AK103  
Instrument: Agilent 7890B R  
Analyst: IVM  
Analytical Date/Time: 9/8/2021 2:43:00PM

Prep Batch: XXX45522  
Prep Method: SW3520C  
Prep Date/Time: 9/7/2021 3:30:28PM  
Prep Initial Wt./Vol.: 250 mL  
Prep Extract Vol: 1 mL

Print Date: 09/21/2021 8:36:09AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1215590 [XXX45522]  
 Blank Spike Lab ID: 1634822  
 Date Analyzed: 09/08/2021 14:52

Spike Duplicate ID: LCSD for HBN 1215590 [XXX45522]  
 Spike Duplicate Lab ID: 1634823  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1215590001, 1215590002, 1215590003

## Results by AK103

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	20	20.7	103	20	17.5	87	( 60-120 )	16.70	(< 20 )
<b>Surrogates</b>									
n-Triacontane-d62 (surr)	0.4		109	0.4		93	( 60-120 )	15.50	

## Batch Information

Analytical Batch: **XFC16077**  
 Analytical Method: **AK103**  
 Instrument: **Agilent 7890B R**  
 Analyst: **IVM**

Prep Batch: **XXX45522**  
 Prep Method: **SW3520C**  
 Prep Date/Time: **09/07/2021 15:30**  
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

1215590



# CHAIN-OF-CUSTODY



2355 Hill Road  
Fairbanks, AK 99709  
(907) 479-0600  
www.shannonwilson.com

Laboratory SGS Page 1 of 1

Attn: Sea Dept/As

Analytical Methods (include preservative if used)

PAH  
DRD/RDD  
GRO/BTFX (soil)

Turnaround Time:  Normal  Rush

Please Specify

Quote No: \_\_\_\_\_

MSA Number: \_\_\_\_\_

J-Flags:  Yes  No

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-11-15	① A-G	925	8-27-21	7	grandwater
MW-17-10	② A-G	1034		7	
MW-112-10	③ A-G	1024		7	
	④ A-C				
	P.F				

Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Number: <u>102599-912</u>	Total No. of Containers: <u>21</u>	Signature: <u>[Signature]</u>	Signature: <u>[Signature]</u>	Signature: <u>[Signature]</u>
Name: <u>GST MWS</u>	COC Seals/Intact? <u>Y/N/N/A</u>	Printed Name: <u>Justin Risley</u>	Printed Name: <u>SGS</u>	Printed Name: <u>Michelle Dea</u>
Contact: <u>KRF</u>	Received Good Cond./Cold	Date: <u>8-20</u>	Date: <u>8-22</u>	Date: <u>8/21/21</u>
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Temp: <u>6.0</u>	Company: <u>Shannon &amp; Wilson, Inc.</u>	Company: <u>SGS</u>	Company: <u>SGS</u>
Sampler: <u>SKR</u>	Delivery Method:	Received By: <u>1.</u>	Received By: <u>2.</u>	Received By: <u>3.</u>
Notes: <u>MSA-SGS-2016</u>				
Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report Yellow - w/shipment - for consignee files Pink - Shannon & Wilson - job file				

No. \_\_\_\_\_



e-Sample Receipt Form FBK

SGS Workorder #:

S&W

S&W

Review Criteria Condition (Yes, No, N/A) Exceptions Noted below

Chain of Custody / Temperature Requirements Yes Exemption permitted if sampler hand carries/delivers.

Were Custody Seals intact? Note # & location	N/A	
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	

<input type="checkbox"/> **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required	
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes
Cooler ID:	1 @ 6.0 °C Therm. ID: D62
Cooler ID:	@ °C Therm. ID:
Cooler ID:	@ °C Therm. ID:
Cooler ID:	@ °C Therm. ID:

If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.

\*If >6°C, were samples collected <8 hours ago?

If <0°C, were sample containers ice free?

Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.

Holding Time / Documentation / Sample Condition Requirements Note: Refer to form F-083 "Sample Guide" for specific holding times.

Do samples match COC\*\* (i.e., sample IDs, dates/times collected)? N/C

\*\*Note: If times differ <1hr, record details & login per COC.

\*\*\*Note: If sample information on containers differs from COC, SGS will default to COC information

Were samples in good condition (no leaks/cracks/breakage)? Yes

Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals) Yes

Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples? Yes

Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)? N/C

Were all soil VOAs field extracted with MeOH+BFB? N/A

For Rush/Short Hold Time, was RUSH/Short HT email sent? N/A

Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):

SGS Profile #	347128	347128
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1215590





e-Sample Receipt Form

SGS Workorder #:

1215590



1 2 1 5 5 9 0

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
<b>Chain of Custody / Temperature Requirements</b>		
Were Custody Seals intact? Note # & location	Yes	1F, 1B
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 4.7 °C Therm. ID: D60
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
<b>Holding Time / Documentation / Sample Condition Requirements</b>		
Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Were samples received within holding time?	Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	No	Containers labeled MW-12-12 based on COC and date and time logged as MW-12-10
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
N/A ***Exemption permitted for metals (e.g.200.8/6020B).		
Were proper containers (type/mass/volume/preservative***)used?	Yes	
<b>Volatile / LL-Hg Requirements</b>		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	Yes	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	
<b>Note to Client:</b> Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		





## Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1215590001-A	No Preservative Required	OK			
1215590001-B	No Preservative Required	OK			
1215590001-C	HCL to pH < 2	OK			
1215590001-D	HCL to pH < 2	OK			
1215590001-E	HCL to pH < 2	OK			
1215590001-F	HCL to pH < 2	OK			
1215590001-G	HCL to pH < 2	OK			
1215590002-A	No Preservative Required	OK			
1215590002-B	No Preservative Required	OK			
1215590002-C	HCL to pH < 2	OK			
1215590002-D	HCL to pH < 2	OK			
1215590002-E	HCL to pH < 2	OK			
1215590002-F	HCL to pH < 2	OK			
1215590002-G	HCL to pH < 2	OK			
1215590003-A	No Preservative Required	OK			
1215590003-B	No Preservative Required	OK			
1215590003-C	HCL to pH < 2	OK			
1215590003-D	HCL to pH < 2	OK			
1215590003-E	HCL to pH < 2	OK			
1215590003-F	HCL to pH < 2	OK			
1215590003-G	HCL to pH < 2	OK			
1215590004-A	HCL to pH < 2	OK			
1215590004-B	HCL to pH < 2	OK			
1215590004-C	HCL to pH < 2	OK			
1215590004-D	HCL to pH < 2	OK			
1215590004-E	HCL to pH < 2	OK			
1215590004-F	HCL to pH < 2	OK			

### Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

## Laboratory Data Review Checklist

Completed By:

Veselina Yakimova

Title:

Geologist

Date:

November 23, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS

Laboratory Report Number:

1215590

Laboratory Report Date:

9/22/2021

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

Laboratory Report Date:

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all the submitted sample analyses?

Yes  No  N/A  Comments:

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

The requested analyses were conducted by SGS, North America, Inc. in Anchorage, AK.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

Cooler 1 was received at 4.7°C.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form noted the samples arrived in good condition.

Laboratory Report Date:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes  No  N/A  Comments:

Sample *MW-12-10* was mislabeled on container label but correct on COC. The sample was logged in correctly per the COC.

- e. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

#### 4. Case Narrative

- a. Present and understandable?

Yes  No  N/A  Comments:

- b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

PAH MS and MSD recoveries for multiple analytes do not meet QC criteria.

MS PAH surrogate recovery for fluoranthene-d10 does not meet QC criteria. MSD PAH surrogate recoveries for 2-methylnaphthalene-d10 and fluoranthene-d10 do not meet QC criteria.

- c. Were all corrective actions documented?

Yes  No  N/A  Comments:

The case narrative refers to the LCS for accuracy requirements.

- d. What is the effect on data quality/usability according to the case narrative?

Comments:

The data quality and/or usability was not affected; see above. See the following sections for our assessment.

#### 5. Samples Results

- a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

Laboratory Report Date:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

e. Data quality or usability affected?

The data quality and/or usability was not affected; see above.

## 6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

None of the requested analytes were detected in the method blanks.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

v. Data quality or usability affected?

Comments:

Data quality or usability is not affected.

Laboratory Report Date:

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A  Comments:

LCS/LCSD samples were analyzed for BTEX, DRO, RRO, and GRO analyses.

An LCS in conjunction with an MS/MSD was reported PAH.

- ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; analytical accuracy and precision were demonstrated to be within acceptable limits.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

Qualification of the data was not required; see above.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

Laboratory Report Date:

## c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

- i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

MS/MSD samples were performed for PAH analysis.

- ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

Percent recovery for multiple PAH analytes were below QC limits.

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A  Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Analytical accuracy and precision are demonstrated by the LCS sample within acceptable limits. The parent sample was not a part of the project set. Therefore, the project sample results are determined to be unaffected.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

Laboratory Report Date:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes  No  N/A  Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A  Comments:

MS PAH surrogate recovery for fluoranthene-d10 does not meet QC criteria. MSD PAH surrogate recoveries for 2-methylnaphthalene-d10 and fluoranthene-d10 were below QC criteria.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

The MS/MSD parent sample was not a part of the project set. The project sample results are unaffected.

iv. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes  No  N/A  Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

Only one cooler was used to transport the samples in this work order.

iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:



Laboratory Report Date:

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

No analytes were detected in the trip blank.

v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

ii. Submitted blind to lab?

Yes  No  N/A  Comments:The field duplicate pair *MW-12-10/MW-112-10* was submitted with this work orderiii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration $R_2$  = Field Duplicate ConcentrationYes  No  N/A  Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and/or usability was not affected; see above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

Equipment blank samples were submitted for PFAS analysis. Due to the absence of petroleum compounds in historical samples, an EB was not submitted for the analyses on this report.

i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

N/A; see above.

1215590

Laboratory Report Date:

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

iii. Data quality or usability affected?

Comments:

No; see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A

Comments:



## Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks  
2355 Hill Rd.  
Fairbanks, AK 99701  
(907)479-0600

Report Number: **1217264**

Client Project: **Q4 DOT MWs**

Dear Kristen Freiburger,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jennifer at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

---

Jennifer Dawkins  
Project Manager  
Jennifer.Dawkins@sgs.com

Date

## Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**

SGS Project: **1217264**

Project Name/Site: **Q4 DOT MWs**

Project Contact: **Kristen Freiburger**

Refer to sample receipt form for information on sample condition.

\*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 11/19/2021 4:25:11PM

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
MW-12-10	1217264001	10/31/2021	11/02/2021	Water (Surface, Eff., Ground)
MW-112-10	1217264002	10/31/2021	11/02/2021	Water (Surface, Eff., Ground)
MW-11-15	1217264003	10/31/2021	11/02/2021	Water (Surface, Eff., Ground)
Trip Blank #2	1217264004	10/21/2021	11/02/2021	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
8270D SIM LV (PAH)	8270 PAH SIM GC/MS LV
AK101	AK101/8021 Combo.
SW8021B	AK101/8021 Combo.
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water

Print Date: 11/19/2021 4:25:15PM

### Detectable Results Summary

Client Sample ID: **MW-112-10**

Lab Sample ID: 1217264002

**Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
2-Methylnaphthalene	0.0162J	ug/L

Client Sample ID: **MW-11-15**

Lab Sample ID: 1217264003

**Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
2-Methylnaphthalene	0.0205J	ug/L

**Semivolatile Organic Fuels**

Diesel Range Organics	0.421J	mg/L
Residual Range Organics	0.632	mg/L

**Volatile Fuels**

Benzene	0.350J	ug/L
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Results of MW-12-10

Client Sample ID: MW-12-10
Client Project ID: Q4 DOT MWs
Lab Sample ID: 1217264001
Lab Project ID: 1217264

Collection Date: 10/31/21 11:11
Received Date: 11/02/21 08:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS12991
Analytical Method: 8270D SIM LV (PAH)
Analyst: LAW
Analytical Date/Time: 11/10/21 21:29
Container ID: 1217264001-C

Prep Batch: XXX45814
Prep Method: SW3535A
Prep Date/Time: 11/05/21 13:00
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL





Results of MW-12-10

Client Sample ID: MW-12-10
Client Project ID: Q4 DOT MWs
Lab Sample ID: 1217264001
Lab Project ID: 1217264

Collection Date: 10/31/21 11:11
Received Date: 11/02/21 08:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane (surr)).

Batch Information

Analytical Batch: XFC16142
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 11/10/21 17:54
Container ID: 1217264001-A

Prep Batch: XXX45833
Prep Method: SW3520C
Prep Date/Time: 11/09/21 15:55
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62 (surr)).

Batch Information

Analytical Batch: XFC16142
Analytical Method: AK103
Analyst: IVM
Analytical Date/Time: 11/10/21 17:54
Container ID: 1217264001-A

Prep Batch: XXX45833
Prep Method: SW3520C
Prep Date/Time: 11/09/21 15:55
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL



Results of MW-12-10

Client Sample ID: MW-12-10
Client Project ID: Q4 DOT MWs
Lab Sample ID: 1217264001
Lab Project ID: 1217264

Collection Date: 10/31/21 11:11
Received Date: 11/02/21 08:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Gasoline Range Organics and Surrogates (4-Bromofluorobenzene).

Batch Information

Analytical Batch: VFC15928
Analytical Method: AK101
Analyst: IJV
Analytical Date/Time: 11/03/21 15:57
Container ID: 1217264001-E
Prep Batch: VXX38139
Prep Method: SW5030B
Prep Date/Time: 11/03/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, Xylenes (total), and Surrogates (1,4-Difluorobenzene).

Batch Information

Analytical Batch: VFC15928
Analytical Method: SW8021B
Analyst: IJV
Analytical Date/Time: 11/03/21 15:57
Container ID: 1217264001-E
Prep Batch: VXX38139
Prep Method: SW5030B
Prep Date/Time: 11/03/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



**Results of MW-112-10**

Client Sample ID: **MW-112-10**  
 Client Project ID: **Q4 DOT MWs**  
 Lab Sample ID: 1217264002  
 Lab Project ID: 1217264

Collection Date: 10/31/21 11:01  
 Received Date: 11/02/21 08:56  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	0.0245 U	0.0490	0.0147	ug/L	1		11/10/21 21:49
2-Methylnaphthalene	0.0162 J	0.0490	0.0147	ug/L	1		11/10/21 21:49
Acenaphthene	0.0245 U	0.0490	0.0147	ug/L	1		11/10/21 21:49
Acenaphthylene	0.0245 U	0.0490	0.0147	ug/L	1		11/10/21 21:49
Anthracene	0.0245 U	0.0490	0.0147	ug/L	1		11/10/21 21:49
Benzo(a)Anthracene	0.0245 U	0.0490	0.0147	ug/L	1		11/10/21 21:49
Benzo[a]pyrene	0.00980 U	0.0196	0.00608	ug/L	1		11/10/21 21:49
Benzo[b]Fluoranthene	0.0245 U	0.0490	0.0147	ug/L	1		11/10/21 21:49
Benzo[g,h,i]perylene	0.0245 U	0.0490	0.0147	ug/L	1		11/10/21 21:49
Benzo[k]fluoranthene	0.0245 U	0.0490	0.0147	ug/L	1		11/10/21 21:49
Chrysene	0.0245 U	0.0490	0.0147	ug/L	1		11/10/21 21:49
Dibenzo[a,h]anthracene	0.00980 U	0.0196	0.00608	ug/L	1		11/10/21 21:49
Fluoranthene	0.0245 U	0.0490	0.0147	ug/L	1		11/10/21 21:49
Fluorene	0.0245 U	0.0490	0.0147	ug/L	1		11/10/21 21:49
Indeno[1,2,3-c,d] pyrene	0.0245 U	0.0490	0.0147	ug/L	1		11/10/21 21:49
Naphthalene	0.0490 U	0.0980	0.0304	ug/L	1		11/10/21 21:49
Phenanthrene	0.0245 U	0.0490	0.0147	ug/L	1		11/10/21 21:49
Pyrene	0.0245 U	0.0490	0.0147	ug/L	1		11/10/21 21:49
<b>Surrogates</b>							
2-Methylnaphthalene-d10 (surr)	57.6	42-86		%	1		11/10/21 21:49
Fluoranthene-d10 (surr)	67.1	50-97		%	1		11/10/21 21:49

**Batch Information**

Analytical Batch: XMS12991  
 Analytical Method: 8270D SIM LV (PAH)  
 Analyst: LAW  
 Analytical Date/Time: 11/10/21 21:49  
 Container ID: 1217264002-C

Prep Batch: XXX45814  
 Prep Method: SW3535A  
 Prep Date/Time: 11/05/21 13:00  
 Prep Initial Wt./Vol.: 255 mL  
 Prep Extract Vol: 1 mL



Results of MW-112-10

Client Sample ID: MW-112-10
Client Project ID: Q4 DOT MWs
Lab Sample ID: 1217264002
Lab Project ID: 1217264

Collection Date: 10/31/21 11:01
Received Date: 11/02/21 08:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane (surr)).

Batch Information

Analytical Batch: XFC16142
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 11/10/21 18:04
Container ID: 1217264002-A

Prep Batch: XXX45833
Prep Method: SW3520C
Prep Date/Time: 11/09/21 15:55
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62 (surr)).

Batch Information

Analytical Batch: XFC16142
Analytical Method: AK103
Analyst: IVM
Analytical Date/Time: 11/10/21 18:04
Container ID: 1217264002-A

Prep Batch: XXX45833
Prep Method: SW3520C
Prep Date/Time: 11/09/21 15:55
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL



Results of MW-112-10

Client Sample ID: MW-112-10
Client Project ID: Q4 DOT MWs
Lab Sample ID: 1217264002
Lab Project ID: 1217264

Collection Date: 10/31/21 11:01
Received Date: 11/02/21 08:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Gasoline Range Organics and Surrogates (4-Bromofluorobenzene).

Batch Information

Analytical Batch: VFC15928
Analytical Method: AK101
Analyst: IJV
Analytical Date/Time: 11/03/21 16:15
Container ID: 1217264002-E

Prep Batch: VXX38139
Prep Method: SW5030B
Prep Date/Time: 11/03/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, and Xylenes (total).

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row includes 1,4-Difluorobenzene (surr).

Batch Information

Analytical Batch: VFC15928
Analytical Method: SW8021B
Analyst: IJV
Analytical Date/Time: 11/03/21 16:15
Container ID: 1217264002-E

Prep Batch: VXX38139
Prep Method: SW5030B
Prep Date/Time: 11/03/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of MW-11-15

Client Sample ID: MW-11-15
Client Project ID: Q4 DOT MWs
Lab Sample ID: 1217264003
Lab Project ID: 1217264

Collection Date: 10/31/21 12:43
Received Date: 11/02/21 08:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS12991
Analytical Method: 8270D SIM LV (PAH)
Analyst: LAW
Analytical Date/Time: 11/10/21 22:10
Container ID: 1217264003-C

Prep Batch: XXX45814
Prep Method: SW3535A
Prep Date/Time: 11/05/21 13:00
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL



Results of MW-11-15

Client Sample ID: MW-11-15
Client Project ID: Q4 DOT MWs
Lab Sample ID: 1217264003
Lab Project ID: 1217264

Collection Date: 10/31/21 12:43
Received Date: 11/02/21 08:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane (surr)).

Batch Information

Analytical Batch: XFC16142
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 11/10/21 18:15
Container ID: 1217264003-A
Prep Batch: XXX45833
Prep Method: SW3520C
Prep Date/Time: 11/09/21 15:55
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62 (surr)).

Batch Information

Analytical Batch: XFC16142
Analytical Method: AK103
Analyst: IVM
Analytical Date/Time: 11/10/21 18:15
Container ID: 1217264003-A
Prep Batch: XXX45833
Prep Method: SW3520C
Prep Date/Time: 11/09/21 15:55
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL



Results of MW-11-15

Client Sample ID: MW-11-15
Client Project ID: Q4 DOT MWs
Lab Sample ID: 1217264003
Lab Project ID: 1217264

Collection Date: 10/31/21 12:43
Received Date: 11/02/21 08:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Gasoline Range Organics and Surrogates (4-Bromofluorobenzene).

Batch Information

Analytical Batch: VFC15928
Analytical Method: AK101
Analyst: IJV
Analytical Date/Time: 11/03/21 16:33
Container ID: 1217264003-E

Prep Batch: VXX38139
Prep Method: SW5030B
Prep Date/Time: 11/03/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, Xylenes (total), and Surrogates (1,4-Difluorobenzene).

Batch Information

Analytical Batch: VFC15928
Analytical Method: SW8021B
Analyst: IJV
Analytical Date/Time: 11/03/21 16:33
Container ID: 1217264003-E

Prep Batch: VXX38139
Prep Method: SW5030B
Prep Date/Time: 11/03/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL





### Results of Trip Blank #2

Client Sample ID: **Trip Blank #2**  
 Client Project ID: **Q4 DOT MWs**  
 Lab Sample ID: 1217264004  
 Lab Project ID: 1217264

Collection Date: 10/21/21 11:01  
 Received Date: 11/02/21 08:56  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

### Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0450	mg/L	1		11/03/21 15:21
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	90.5	50-150		%	1		11/03/21 15:21

### Batch Information

Analytical Batch: VFC15928  
 Analytical Method: AK101  
 Analyst: IJV  
 Analytical Date/Time: 11/03/21 15:21  
 Container ID: 1217264004-A

Prep Batch: VXX38139  
 Prep Method: SW5030B  
 Prep Date/Time: 11/03/21 06:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.250 U	0.500	0.150	ug/L	1		11/03/21 15:21
Ethylbenzene	0.500 U	1.00	0.500	ug/L	1		11/03/21 15:21
o-Xylene	0.500 U	1.00	0.500	ug/L	1		11/03/21 15:21
P & M -Xylene	1.00 U	2.00	0.900	ug/L	1		11/03/21 15:21
Toluene	0.500 U	1.00	0.500	ug/L	1		11/03/21 15:21
Xylenes (total)	1.50 U	3.00	1.40	ug/L	1		11/03/21 15:21
<b>Surrogates</b>							
1,4-Difluorobenzene (surr)	90.2	77-115		%	1		11/03/21 15:21

### Batch Information

Analytical Batch: VFC15928  
 Analytical Method: SW8021B  
 Analyst: IJV  
 Analytical Date/Time: 11/03/21 15:21  
 Container ID: 1217264004-A

Prep Batch: VXX38139  
 Prep Method: SW5030B  
 Prep Date/Time: 11/03/21 06:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Method Blank

Blank ID: MB for HBN 1828105 [VXX/38139]

Blank Lab ID: 1645819

QC for Samples:

1217264001, 1217264002, 1217264003, 1217264004

Matrix: Water (Surface, Eff., Ground)

## Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0450	mg/L
<b>Surrogates</b>				
4-Bromofluorobenzene (surr)	94.5	50-150		%

## Batch Information

Analytical Batch: VFC15928

Analytical Method: AK101

Instrument: Agilent 7890 PID/FID

Analyst: IJV

Analytical Date/Time: 11/3/2021 9:14:00AM

Prep Batch: VXX38139

Prep Method: SW5030B

Prep Date/Time: 11/3/2021 6:00:00AM

Prep Initial Wt./Vol.: 5 mL

Prep Extract Vol: 5 mL



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1217264 [VXX38139]  
 Blank Spike Lab ID: 1645822  
 Date Analyzed: 11/03/2021 10:08

Spike Duplicate ID: LCSD for HBN 1217264 [VXX38139]  
 Spike Duplicate Lab ID: 1645823  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1217264001, 1217264002, 1217264003, 1217264004

### Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	1.05	105	1.00	1.03	103	( 60-120 )	2.10	(< 20 )
<b>Surrogates</b>									
4-Bromofluorobenzene (surr)	0.0500		105	0.0500		102	( 50-150 )	3.30	

### Batch Information

Analytical Batch: **VFC15928**  
 Analytical Method: **AK101**  
 Instrument: **Agilent 7890 PID/FID**  
 Analyst: **IJV**

Prep Batch: **VXX38139**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **11/03/2021 06:00**  
 Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 11/19/2021 4:25:23PM

## Method Blank

Blank ID: MB for HBN 1828105 [VXX/38139]  
 Blank Lab ID: 1645819

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1217264001, 1217264002, 1217264003, 1217264004

## Results by SW8021B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.250U	0.500	0.150	ug/L
Ethylbenzene	0.500U	1.00	0.500	ug/L
o-Xylene	0.500U	1.00	0.500	ug/L
P & M -Xylene	1.00U	2.00	0.900	ug/L
Toluene	0.500U	1.00	0.500	ug/L
Xylenes (total)	1.50U	3.00	1.40	ug/L
<b>Surrogates</b>				
1,4-Difluorobenzene (surr)	90	77-115		%

## Batch Information

Analytical Batch: VFC15928  
 Analytical Method: SW8021B  
 Instrument: Agilent 7890 PID/FID  
 Analyst: IJV  
 Analytical Date/Time: 11/3/2021 9:14:00AM

Prep Batch: VXX38139  
 Prep Method: SW5030B  
 Prep Date/Time: 11/3/2021 6:00:00AM  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1217264 [VXX38139]  
 Blank Spike Lab ID: 1645820  
 Date Analyzed: 11/03/2021 09:50

Spike Duplicate ID: LCSD for HBN 1217264 [VXX38139]  
 Spike Duplicate Lab ID: 1645821  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1217264001, 1217264002, 1217264003, 1217264004

### Results by SW8021B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	100	114	114	100	104	104	( 80-120 )	9.10	(< 20 )
Ethylbenzene	100	111	111	100	101	101	( 75-125 )	8.90	(< 20 )
o-Xylene	100	107	107	100	98.3	98	( 80-120 )	8.60	(< 20 )
P & M -Xylene	200	221	110	200	202	101	( 75-130 )	8.70	(< 20 )
Toluene	100	110	110	100	102	102	( 75-120 )	8.10	(< 20 )
Xylenes (total)	300	328	109	300	300	100	( 79-121 )	8.70	(< 20 )

### Surrogates

1,4-Difluorobenzene (surr)	50		98	50		101	( 77-115 )	3.60	
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### Batch Information

Analytical Batch: **VFC15928**  
 Analytical Method: **SW8021B**  
 Instrument: **Agilent 7890 PID/FID**  
 Analyst: **IJV**

Prep Batch: **VXX38139**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **11/03/2021 06:00**  
 Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL

Print Date: 11/19/2021 4:25:28PM



**Method Blank**

Blank ID: MB for HBN 1828070 [XXX/45814]  
Blank Lab ID: 1645669

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1217264001, 1217264002, 1217264003

**Results by 8270D SIM LV (PAH)**

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0240J	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
<b>Surrogates</b>				
2-Methylnaphthalene-d10 (surr)	56.6	42-86		%
Fluoranthene-d10 (surr)	75.2	50-97		%

**Batch Information**

Analytical Batch: XMS12991  
Analytical Method: 8270D SIM LV (PAH)  
Instrument: Agilent GC 7890B/5977A SWA  
Analyst: LAW  
Analytical Date/Time: 11/10/2021 4:01:00PM

Prep Batch: XXX45814  
Prep Method: SW3535A  
Prep Date/Time: 11/5/2021 1:00:24PM  
Prep Initial Wt./Vol.: 250 mL  
Prep Extract Vol: 1 mL

Print Date: 11/19/2021 4:25:30PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1217264 [XXX45814]  
 Blank Spike Lab ID: 1645670  
 Date Analyzed: 11/10/2021 16:22

Spike Duplicate ID: LCSD for HBN 1217264  
 [XXX45814]  
 Spike Duplicate Lab ID: 1645671  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1217264001, 1217264002, 1217264003

## Results by 8270D SIM LV (PAH)

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	2	1.53	77	2	1.46	73	( 41-115 )	5.10	(< 20 )
2-Methylnaphthalene	2	1.51	75	2	1.44	72	( 39-114 )	4.70	(< 20 )
Acenaphthene	2	1.66	83	2	1.60	80	( 48-114 )	3.60	(< 20 )
Acenaphthylene	2	1.69	84	2	1.64	82	( 35-121 )	2.70	(< 20 )
Anthracene	2	1.71	85	2	1.64	82	( 53-119 )	3.80	(< 20 )
Benzo(a)Anthracene	2	1.82	91	2	1.76	88	( 59-120 )	3.20	(< 20 )
Benzo[a]pyrene	2	1.76	88	2	1.77	89	( 53-120 )	0.90	(< 20 )
Benzo[b]Fluoranthene	2	1.72	86	2	1.71	86	( 53-126 )	0.74	(< 20 )
Benzo[g,h,i]perylene	2	1.67	84	2	1.68	84	( 44-128 )	0.42	(< 20 )
Benzo[k]fluoranthene	2	1.83	92	2	1.85	93	( 54-125 )	1.20	(< 20 )
Chrysene	2	1.84	92	2	1.82	91	( 57-120 )	1.30	(< 20 )
Dibenzo[a,h]anthracene	2	1.68	84	2	1.68	84	( 44-131 )	0.15	(< 20 )
Fluoranthene	2	1.95	97	2	1.91	96	( 58-120 )	1.70	(< 20 )
Fluorene	2	1.76	88	2	1.71	85	( 50-118 )	3.30	(< 20 )
Indeno[1,2,3-c,d] pyrene	2	1.68	84	2	1.69	85	( 48-130 )	0.86	(< 20 )
Naphthalene	2	1.51	75	2	1.45	73	( 43-114 )	3.60	(< 20 )
Phenanthrene	2	1.74	87	2	1.63	82	( 53-115 )	6.30	(< 20 )
Pyrene	2	1.91	96	2	1.84	92	( 53-121 )	3.50	(< 20 )

## Surrogates

2-Methylnaphthalene-d10 (surr)	2		63	2		60	( 42-86 )	4.60	
Fluoranthene-d10 (surr)	2		80	2		78	( 50-97 )	2.00	

## Batch Information

Analytical Batch: XMS12991  
 Analytical Method: 8270D SIM LV (PAH)  
 Instrument: Agilent GC 7890B/5977A SWA  
 Analyst: LAW

Prep Batch: XXX45814  
 Prep Method: SW3535A  
 Prep Date/Time: 11/05/2021 13:00  
 Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

## Method Blank

Blank ID: MB for HBN 1828283 [XXX/45833]  
Blank Lab ID: 1646523

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1217264001, 1217264002, 1217264003

## Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.300U	0.600	0.200	mg/L
<b>Surrogates</b>				
5a Androstane (surr)	67.7	60-120		%

## Batch Information

Analytical Batch: XFC16142  
Analytical Method: AK102  
Instrument: Agilent 7890B F  
Analyst: IVM  
Analytical Date/Time: 11/10/2021 2:16:00PM

Prep Batch: XXX45833  
Prep Method: SW3520C  
Prep Date/Time: 11/9/2021 3:55:16PM  
Prep Initial Wt./Vol.: 250 mL  
Prep Extract Vol: 1 mL

Print Date: 11/19/2021 4:25:35PM



## Blank Spike Summary

Blank Spike ID: LCS for HBN 1217264 [XXX45833]  
 Blank Spike Lab ID: 1646524  
 Date Analyzed: 11/10/2021 14:26

Spike Duplicate ID: LCSD for HBN 1217264 [XXX45833]  
 Spike Duplicate Lab ID: 1646525  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1217264001, 1217264002, 1217264003

## Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	18.3	91	20	17.0	85	( 75-125 )	7.20	(< 20 )
<b>Surrogates</b>									
5a Androstane (surr)	0.4		94	0.4		88	( 60-120 )	7.00	

## Batch Information

Analytical Batch: **XFC16142**  
 Analytical Method: **AK102**  
 Instrument: **Agilent 7890B F**  
 Analyst: **IVM**

Prep Batch: **XXX45833**  
 Prep Method: **SW3520C**  
 Prep Date/Time: **11/09/2021 15:55**  
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Print Date: 11/19/2021 4:25:37PM

## Method Blank

Blank ID: MB for HBN 1828283 [XXX/45833]

Blank Lab ID: 1646523

QC for Samples:

1217264001, 1217264002, 1217264003

Matrix: Water (Surface, Eff., Ground)

## Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	0.250U	0.500	0.200	mg/L
<b>Surrogates</b>				
n-Triacontane-d62 (surr)	82.6	60-120		%

## Batch Information

Analytical Batch: XFC16142

Analytical Method: AK103

Instrument: Agilent 7890B F

Analyst: IVM

Analytical Date/Time: 11/10/2021 2:16:00PM

Prep Batch: XXX45833

Prep Method: SW3520C

Prep Date/Time: 11/9/2021 3:55:16PM

Prep Initial Wt./Vol.: 250 mL

Prep Extract Vol: 1 mL

Print Date: 11/19/2021 4:25:40PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1217264 [XXX45833]  
 Blank Spike Lab ID: 1646524  
 Date Analyzed: 11/10/2021 14:26

Spike Duplicate ID: LCSD for HBN 1217264  
 [XXX45833]  
 Spike Duplicate Lab ID: 1646525  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1217264001, 1217264002, 1217264003

## Results by AK103

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	20	20.5	103	20	18.4	92	( 60-120 )	10.80	(< 20 )
<b>Surrogates</b>									
n-Triacontane-d62 (surr)	0.4		89	0.4		86	( 60-120 )	3.60	

## Batch Information

Analytical Batch: **XFC16142**  
 Analytical Method: **AK103**  
 Instrument: **Agilent 7890B F**  
 Analyst: **IVM**

Prep Batch: **XXX45833**  
 Prep Method: **SW3520C**  
 Prep Date/Time: **11/09/2021 15:55**  
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Address: \_\_\_\_\_

Regulatory Program:  DW  NPDDES  RCRA  Other: \_\_\_\_\_


Company Name: **Shannon & Wilson**  
 Address: \_\_\_\_\_  
 City/State/Zip: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Fax: \_\_\_\_\_  
 Project Name: **04 DOT MWs**  
 Site: \_\_\_\_\_  
 P O # \_\_\_\_\_

Client Contact  
 Project Manager: **Shannon & Wilson**  
 Tel/Email: \_\_\_\_\_

Site Contact: **Krista F.**  
 Lab Contact: \_\_\_\_\_

Analysis Turnaround Time  
 CALENDAR DAYS  WORKING DAYS  
 TAT if different from Below \_\_\_\_\_  
 2 weeks  
 1 week  
 2 days  
 1 day

COC No: \_\_\_\_\_ of \_\_\_\_\_ COCs  
 Sampler: \_\_\_\_\_  
 For Lab Use Only:  
 a/alk-in Client: \_\_\_\_\_  
 b/Sampling: \_\_\_\_\_  
 b/SDG No.: \_\_\_\_\_

1217264  


Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Sample Specific Notes:
119 MW-12-10	10-31-21	1111	G	W	7			
219 MW-12-10	1101		G	W	7			
319 MW-11-15	1243		G	W	7			
419 Trip Blank #2	10-21-21		TB	W	1(3)			

Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other \_\_\_\_\_

Possible Hazard Identification: \_\_\_\_\_  
 Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Special Instructions/QC Requirements & Comments: \_\_\_\_\_

Cooler Temp. (°C): Obs'd: \_\_\_\_\_ Cor'd: \_\_\_\_\_ Therm ID No.: \_\_\_\_\_

Received by: \_\_\_\_\_ Company: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Received by: \_\_\_\_\_ Company: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Received in Laboratory by: **AM** Company: **SGS** Date/Time: **11/21/21**

Relinquished by: **Krista Freiberg** Company: **SGS** Date/Time: **1300 11-21**  
 Relinquished by: \_\_\_\_\_ Company: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_ Company: \_\_\_\_\_ Date/Time: \_\_\_\_\_


ANG: 15-1RS 1.5 D58  
 Page 20 of 60

027 JNU 9031 9843

Big C

027-9031 9843

11/2

Shipper's Name and Address Shannon and Wilson Inc 2355 Hill Rd Fairbanks, AK 99712 USA  Tel: 907-479-0600	Shipper's Account Number 27400200733  Customer's ID Number 10926	Not Negotiable  <b>Air Waybill</b> Issued By   P.O. BOX 68900 SEATTLE, WA 98168 800-225-2752 ALASKACARGO.COM
---	--	--

Consignee's Name and Address SGS North America 200 W Potter Drive Anchorage, AK 99518 USA  Tel: 907-562-2343	Consignee's Account Number 27400215947	Also notify     Tel:
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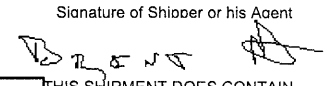
Issuing Carrier's Agent and City  Agent's IATA Code  Account No.	Accounting Information Shannon and Wilson Inc 2355 Hill Rd Fairbanks, AK 99712 USA  SRN/SGSENVIROSAMPL GoldStreak	10926
--	--	-------

To By First Carrier ANC Alaska Airlines	To / By	To / By	Currency USD PX	WT/VAL X	Other X	Declared Value For Carriage NVD	Declared Value For Customs NCV	
Airport of Destination Anchorage	Flight/Date AS 067/01	Flight/Date	Amount of Insurance XXX	Handling Information STORE IN COOLER WHEN POSSIBLE NOA 907 562 2343				SCI

Handling Information STORE IN COOLER WHEN POSSIBLE NOA 907 562 2343							SCI
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No of Pieces	Gross Weight	kg lb	Commodity Item No.	Chargeable Weight	Rate / Charge	Total	Nature and Quantity of Goods (Incl. Dimensions or Volume)
2	86.0	L Q		100.0		AS AGREED	ENVIRONMENTAL SAMPLE
2	86.0					AS AGREED	GSX COL Volume: 5.266

Prepaid AS AGREED	Weight Charge Collect	Other Charges XBC 10.00
Valuation Charge		
Tax		

Total Other Charges Due Agent	Shipper certifies that the particulars on the face hereof are correct and that insofar as any part of the consignment contains dangerous goods, such part is properly described by name and is in proper condition for carriage by air according to the applicable Dangerous Goods Regulations. I consent to the inspection of this cargo.
Total Other Charges Due Carrier	For: Shannon and Wilson Inc Signature of Shipper or his Agent 
Total Prepaid AS AGREED	Total Collect

Executed On (Date) 01 Nov 2021 15:01	at (Place) Juneau	Signature of Issuing Carrier or its Agent Alaska Airlines
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e-Sample Receipt Form

SGS Workorder #:

1217264

1217264

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
<b>Chain of Custody / Temperature Requirements</b>		
Were Custody Seals intact? Note # & location	Yes	N/A Exemption permitted if sampler hand carries/delivers.
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 1.5 °C Therm. ID: D58
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
<b>Holding Time / Documentation / Sample Condition Requirements</b>		
Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Were samples received within holding time?	Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
N/A ***Exemption permitted for metals (e.g.200.8/6020A).		
Were proper containers (type/mass/volume/preservative***)used?	Yes	
<b>Volatile / LL-Hg Requirements</b>		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	Yes	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	
<b>Note to Client:</b> Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



## Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1217264001-A	HCL to pH < 2	OK			
1217264001-B	HCL to pH < 2	OK			
1217264001-C	No Preservative Required	OK			
1217264001-D	No Preservative Required	OK			
1217264001-E	HCL to pH < 2	OK			
1217264001-F	HCL to pH < 2	OK			
1217264001-G	HCL to pH < 2	OK			
1217264002-A	HCL to pH < 2	OK			
1217264002-B	HCL to pH < 2	OK			
1217264002-C	No Preservative Required	OK			
1217264002-D	No Preservative Required	OK			
1217264002-E	HCL to pH < 2	OK			
1217264002-F	HCL to pH < 2	OK			
1217264002-G	HCL to pH < 2	OK			
1217264003-A	HCL to pH < 2	OK			
1217264003-B	HCL to pH < 2	OK			
1217264003-C	No Preservative Required	OK			
1217264003-D	No Preservative Required	OK			
1217264003-E	HCL to pH < 2	OK			
1217264003-F	HCL to pH < 2	OK			
1217264003-G	HCL to pH < 2	OK			
1217264004-A	HCL to pH < 2	OK			
1217264004-B	HCL to pH < 2	OK			
1217264004-C	HCL to pH < 2	OK			

### Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.



**Laboratory Data Review Checklist**

Completed By:

Veselina Yakimova

Title:

Geologist

Date:

November 22, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS

Laboratory Report Number:

1217264

Laboratory Report Date:

11/22/2021

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

Laboratory Report Date:

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all the submitted sample analyses?

Yes  No  N/A  Comments:

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

The requested analyses were conducted by SGS, North America, Inc. in Anchorage, AK.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

Cooler 1 was received at 1.5°C.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form noted the samples arrived in good condition.

Laboratory Report Date:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes  No  N/A  Comments:

No discrepancies were noted.

- e. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

#### 4. Case Narrative

- a. Present and understandable?

Yes  No  N/A  Comments:

- b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

The case narrative does not identify any QC failures, discrepancies, or errors.

- c. Were all corrective actions documented?

Yes  No  N/A  Comments:

See above.

- d. What is the effect on data quality/usability according to the case narrative?

Comments:

The data quality and/or usability was not affected; see above.

#### 5. Samples Results

- a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

- b. All applicable holding times met?

Yes  No  N/A  Comments:

Laboratory Report Date:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

e. Data quality or usability affected?

The data quality and/or usability was not affected; see above.

## 6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

Phenanthrene was detected below the LOQ in the method blank.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Phenanthrene was not detected in any of the project samples. No qualification is required.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

v. Data quality or usability affected?

Comments:

Data quality or usability is not affected.

Laboratory Report Date:

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A  Comments:

LCS/LCSD samples were analyzed for the requested analyses.

- ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; analytical accuracy and precision were demonstrated to be within acceptable limits.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

Qualification of the data was not required; see above.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

Laboratory Report Date:

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

- i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

The laboratory analyzed an LCS and LCSD to assess laboratory accuracy and precision for all requested analyses.

- ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

No MS/MSD were reported with this work order.

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A  Comments:

No MS/MSD were reported with this work order.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

No MS/MSD were reported with this work order. Analytical accuracy and precision are demonstrated by the LCS/LCSD samples to be within acceptable limits.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes  No  N/A  Comments:

Laboratory Report Date:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A  Comments:

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

There were no surrogate recovery failures associated with this work order.

- iv. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes  No  N/A  Comments:

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

Only one cooler was used to transport the samples in this work order.

- iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

No analytes were detected in the trip blank.

- v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

Laboratory Report Date:

## f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

ii. Submitted blind to lab?

Yes  No  N/A  Comments:The field duplicate pair *MW-12-10/MW-112-10* was submitted with this work orderiii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration $R_2$  = Field Duplicate ConcentrationYes  No  N/A  Comments:No project analytes were detected in the duplicate pair, except for 2-methylnaphtalene in *MW-112-10*. RPD is not calculable.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and/or usability was not affected; see above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:Project samples *MW-12-10* and *MW-112-10* were collected using a submersible pump. However, the pump malfunctioned during purging of *MW-11-15* and the sample was collected using a peristaltic pump. No equipment blank was collected for samples *MW-12-10* and *MW-112-10*. Sample *MW-11-15* was not collected with reusable equipment, so the prospect of foreign contaminants being introduced through equipment contamination is not plausible.

i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

An equipment blank was not submitted for this project; see above.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.



1217264

Laboratory Report Date:

iii. Data quality or usability affected?

Comments:

No; see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A

Comments:



## Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks  
2355 Hill Rd.  
Fairbanks, AK 99701  
(907)479-0600

Report Number: **1220600**

Client Project: **102599-019 Gustavus MW**

Dear Kristen Freiburger,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jennifer at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

---

Jennifer Dawkins  
Project Manager  
Jennifer.Dawkins@sgs.com

Date

### Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**  
SGS Project: **1220600**  
Project Name/Site: **102599-019 Gustavus MW**  
Project Contact: **Kristen Freiburger**

Refer to sample receipt form for information on sample condition.

**EB-11-15 (1220600001) PS**

8270D SIM - PAH LCS/LCSD RPD for naphthalene and 2-methylnaphthalene does not meet QC criteria.

**LCSD for HBN 1831277 [XXX/4605 (1654667) LCSD**

8270D SIM - PAH LCS/LCSD RPD for several analytes does not meet QC criteria. The associated sample concentrations for this analyte are less than the LOQ.

\*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 02/24/2022 3:17:52PM

### Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

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SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry (Provisionally Certified as of 2/15/2022 for 200.8 Metals) & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
EB-11-15	1220600001	02/10/2022	02/12/2022	Water (Surface, Eff., Ground)
MW-111-15	1220600002	02/10/2022	02/12/2022	Water (Surface, Eff., Ground)
MW-11-15	1220600003	02/10/2022	02/12/2022	Water (Surface, Eff., Ground)
Trip Blank	1220600004	02/10/2022	02/12/2022	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
8270D SIM LV (PAH)	8270 PAH SIM GC/MS LV
AK101	AK101/8021 Combo.
SW8021B	AK101/8021 Combo.
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water

Print Date: 02/24/2022 3:17:55PM

### Detectable Results Summary

Client Sample ID: **EB-11-15**

Lab Sample ID: 1220600001

**Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
2-Methylnaphthalene	0.0196J	ug/L
Naphthalene	0.0416J	ug/L
Diesel Range Organics	0.305J	mg/L
Residual Range Organics	0.269J	mg/L
Toluene	0.820J	ug/L

**Semivolatile Organic Fuels**

**Volatile Fuels**

Client Sample ID: **MW-111-15**

Lab Sample ID: 1220600002

**Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Benzo(a)Anthracene	0.0166J	ug/L
Benzo[a]pyrene	0.0130J	ug/L
Benzo[b]Fluoranthene	0.0223J	ug/L
Benzo[k]fluoranthene	0.0211J	ug/L
Chrysene	0.0153J	ug/L
Dibenzo[a,h]anthracene	0.0121J	ug/L
Indeno[1,2,3-c,d] pyrene	0.0164J	ug/L
Diesel Range Organics	0.345J	mg/L
Residual Range Organics	0.407J	mg/L

**Semivolatile Organic Fuels**

Client Sample ID: **MW-11-15**

Lab Sample ID: 1220600003

**Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.368J	mg/L
Residual Range Organics	0.400J	mg/L



Results of EB-11-15

Client Sample ID: EB-11-15
Client Project ID: 102599-019 Gustavus MW
Lab Sample ID: 1220600001
Lab Project ID: 1220600

Collection Date: 02/10/22 15:00
Received Date: 02/12/22 13:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate values.

Batch Information

Analytical Batch: XMS13073
Analytical Method: 8270D SIM LV (PAH)
Analyst: IVM
Analytical Date/Time: 02/17/22 20:17
Container ID: 1220600001-F

Prep Batch: XXX46053
Prep Method: SW3535A
Prep Date/Time: 02/16/22 10:48
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL



Results of EB-11-15

Client Sample ID: EB-11-15  
Client Project ID: 102599-019 Gustavus MW  
Lab Sample ID: 1220600001  
Lab Project ID: 1220600

Collection Date: 02/10/22 15:00  
Received Date: 02/12/22 13:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by Semivolatile Organic Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.305 J	0.588	0.196	mg/L	1		02/23/22 14:10
<b>Surrogates</b>							
5a Androstane (surr)	75.8	50-150		%	1		02/23/22 14:10

Batch Information

Analytical Batch: XFC16183  
Analytical Method: AK102  
Analyst: MDT  
Analytical Date/Time: 02/23/22 14:10  
Container ID: 1220600001-D

Prep Batch: XXX46064  
Prep Method: SW3520C  
Prep Date/Time: 02/22/22 16:02  
Prep Initial Wt./Vol.: 255 mL  
Prep Extract Vol: 1 mL

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.269 J	0.490	0.196	mg/L	1		02/23/22 14:10
<b>Surrogates</b>							
n-Triacontane-d62 (surr)	99.5	50-150		%	1		02/23/22 14:10

Batch Information

Analytical Batch: XFC16183  
Analytical Method: AK103  
Analyst: MDT  
Analytical Date/Time: 02/23/22 14:10  
Container ID: 1220600001-D

Prep Batch: XXX46064  
Prep Method: SW3520C  
Prep Date/Time: 02/22/22 16:02  
Prep Initial Wt./Vol.: 255 mL  
Prep Extract Vol: 1 mL





Results of EB-11-15

Client Sample ID: EB-11-15
Client Project ID: 102599-019 Gustavus MW
Lab Sample ID: 1220600001
Lab Project ID: 1220600

Collection Date: 02/10/22 15:00
Received Date: 02/12/22 13:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Gasoline Range Organics, 0.0500 U, 0.100, 0.0450, mg/L, 1, 02/14/22 18:04

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 4-Bromofluorobenzene (surr), 84.7, 50-150, %, 1, 02/14/22 18:04

Batch Information

Analytical Batch: VFC16015
Analytical Method: AK101
Analyst: PHK
Analytical Date/Time: 02/14/22 18:04
Container ID: 1220600001-B

Prep Batch: VXX38365
Prep Method: SW5030B
Prep Date/Time: 02/14/22 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows: Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, Xylenes (total)

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 1,4-Difluorobenzene (surr), 97.5, 77-115, %, 1, 02/14/22 18:04

Batch Information

Analytical Batch: VFC16015
Analytical Method: SW8021B
Analyst: PHK
Analytical Date/Time: 02/14/22 18:04
Container ID: 1220600001-B

Prep Batch: VXX38365
Prep Method: SW5030B
Prep Date/Time: 02/14/22 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of MW-111-15

Client Sample ID: MW-111-15
Client Project ID: 102599-019 Gustavus MW
Lab Sample ID: 1220600002
Lab Project ID: 1220600

Collection Date: 02/10/22 13:44
Received Date: 02/12/22 13:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists surrogate compounds like 2-Methylnaphthalene-d10 and Fluoranthene-d10.

Batch Information

Analytical Batch: XMS13073
Analytical Method: 8270D SIM LV (PAH)
Analyst: IVM
Analytical Date/Time: 02/17/22 20:37
Container ID: 1220600002-F

Prep Batch: XXX46053
Prep Method: SW3535A
Prep Date/Time: 02/16/22 10:48
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL



Results of MW-111-15

Client Sample ID: MW-111-15
Client Project ID: 102599-019 Gustavus MW
Lab Sample ID: 1220600002
Lab Project ID: 1220600

Collection Date: 02/10/22 13:44
Received Date: 02/12/22 13:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Diesel Range Organics, 0.345 J, 0.588, 0.196, mg/L, 1, 02/23/22 14:19

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 5a Androstane (surr), 68.8, 50-150, %, 1, 02/23/22 14:19

Batch Information

Analytical Batch: XFC16183
Analytical Method: AK102
Analyst: MDT
Analytical Date/Time: 02/23/22 14:19
Container ID: 1220600002-D

Prep Batch: XXX46064
Prep Method: SW3520C
Prep Date/Time: 02/22/22 16:02
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Residual Range Organics, 0.407 J, 0.490, 0.196, mg/L, 1, 02/23/22 14:19

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: n-Triacontane-d62 (surr), 94.1, 50-150, %, 1, 02/23/22 14:19

Batch Information

Analytical Batch: XFC16183
Analytical Method: AK103
Analyst: MDT
Analytical Date/Time: 02/23/22 14:19
Container ID: 1220600002-D

Prep Batch: XXX46064
Prep Method: SW3520C
Prep Date/Time: 02/22/22 16:02
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL



Results of MW-111-15

Client Sample ID: MW-111-15
Client Project ID: 102599-019 Gustavus MW
Lab Sample ID: 1220600002
Lab Project ID: 1220600

Collection Date: 02/10/22 13:44
Received Date: 02/12/22 13:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Gasoline Range Organics, 0.0500 U, 0.100, 0.0450, mg/L, 1, 02/14/22 18:22

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 4-Bromofluorobenzene (surr), 86, 50-150, %, 1, 02/14/22 18:22

Batch Information

Analytical Batch: VFC16015
Analytical Method: AK101
Analyst: PHK
Analytical Date/Time: 02/14/22 18:22
Container ID: 1220600002-B

Prep Batch: VXX38365
Prep Method: SW5030B
Prep Date/Time: 02/14/22 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows: Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, Xylenes (total)

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 1,4-Difluorobenzene (surr), 97.8, 77-115, %, 1, 02/14/22 18:22

Batch Information

Analytical Batch: VFC16015
Analytical Method: SW8021B
Analyst: PHK
Analytical Date/Time: 02/14/22 18:22
Container ID: 1220600002-B

Prep Batch: VXX38365
Prep Method: SW5030B
Prep Date/Time: 02/14/22 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of MW-11-15

Client Sample ID: MW-11-15
Client Project ID: 102599-019 Gustavus MW
Lab Sample ID: 1220600003
Lab Project ID: 1220600

Collection Date: 02/10/22 13:54
Received Date: 02/12/22 13:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS13073
Analytical Method: 8270D SIM LV (PAH)
Analyst: IVM
Analytical Date/Time: 02/17/22 20:58
Container ID: 1220600003-F

Prep Batch: XXX46053
Prep Method: SW3535A
Prep Date/Time: 02/16/22 10:48
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL



Results of MW-11-15

Client Sample ID: MW-11-15
Client Project ID: 102599-019 Gustavus MW
Lab Sample ID: 1220600003
Lab Project ID: 1220600

Collection Date: 02/10/22 13:54
Received Date: 02/12/22 13:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Diesel Range Organics, 0.368 J, 0.577, 0.192, mg/L, 1, 02/23/22 14:30

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 5a Androstane (surr), 65, 50-150, %, 1, 02/23/22 14:30

Batch Information

Analytical Batch: XFC16183
Analytical Method: AK102
Analyst: MDT
Analytical Date/Time: 02/23/22 14:30
Container ID: 1220600003-D

Prep Batch: XXX46064
Prep Method: SW3520C
Prep Date/Time: 02/22/22 16:02
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Residual Range Organics, 0.400 J, 0.481, 0.192, mg/L, 1, 02/23/22 14:30

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: n-Triacontane-d62 (surr), 85.2, 50-150, %, 1, 02/23/22 14:30

Batch Information

Analytical Batch: XFC16183
Analytical Method: AK103
Analyst: MDT
Analytical Date/Time: 02/23/22 14:30
Container ID: 1220600003-D

Prep Batch: XXX46064
Prep Method: SW3520C
Prep Date/Time: 02/22/22 16:02
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL



Results of MW-11-15

Client Sample ID: MW-11-15
Client Project ID: 102599-019 Gustavus MW
Lab Sample ID: 1220600003
Lab Project ID: 1220600

Collection Date: 02/10/22 13:54
Received Date: 02/12/22 13:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Gasoline Range Organics, 0.0500 U, 0.100, 0.0450, mg/L, 1, 02/14/22 18:40

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 4-Bromofluorobenzene (surr), 91.8, 50-150, %, 1, 02/14/22 18:40

Batch Information

Analytical Batch: VFC16015
Analytical Method: AK101
Analyst: PHK
Analytical Date/Time: 02/14/22 18:40
Container ID: 1220600003-B

Prep Batch: VXX38365
Prep Method: SW5030B
Prep Date/Time: 02/14/22 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows: Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, Xylenes (total)

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 1,4-Difluorobenzene (surr), 98.2, 77-115, %, 1, 02/14/22 18:40

Batch Information

Analytical Batch: VFC16015
Analytical Method: SW8021B
Analyst: PHK
Analytical Date/Time: 02/14/22 18:40
Container ID: 1220600003-B

Prep Batch: VXX38365
Prep Method: SW5030B
Prep Date/Time: 02/14/22 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



**Results of Trip Blank**

Client Sample ID: **Trip Blank**  
Client Project ID: **102599-019 Gustavus MW**  
Lab Sample ID: 1220600004  
Lab Project ID: 1220600

Collection Date: 02/10/22 13:44  
Received Date: 02/12/22 13:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Volatile Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0450	mg/L	1		02/14/22 17:46

**Surrogates**

4-Bromofluorobenzene (surr)	78.5	50-150		%	1		02/14/22 17:46
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**Batch Information**

Analytical Batch: VFC16015  
Analytical Method: AK101  
Analyst: PHK  
Analytical Date/Time: 02/14/22 17:46  
Container ID: 1220600004-B

Prep Batch: VXX38365  
Prep Method: SW5030B  
Prep Date/Time: 02/14/22 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.250 U	0.500	0.150	ug/L	1		02/14/22 17:46
Ethylbenzene	0.500 U	1.00	0.500	ug/L	1		02/14/22 17:46
o-Xylene	0.500 U	1.00	0.500	ug/L	1		02/14/22 17:46
P & M -Xylene	1.00 U	2.00	0.900	ug/L	1		02/14/22 17:46
Toluene	0.500 U	1.00	0.500	ug/L	1		02/14/22 17:46
Xylenes (total)	1.50 U	3.00	1.40	ug/L	1		02/14/22 17:46

**Surrogates**

1,4-Difluorobenzene (surr)	99.2	77-115		%	1		02/14/22 17:46
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**Batch Information**

Analytical Batch: VFC16015  
Analytical Method: SW8021B  
Analyst: PHK  
Analytical Date/Time: 02/14/22 17:46  
Container ID: 1220600004-B

Prep Batch: VXX38365  
Prep Method: SW5030B  
Prep Date/Time: 02/14/22 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL





### Method Blank

Blank ID: MB for HBN 1831279 [VXX/38365]  
Blank Lab ID: 1654671

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1220600001, 1220600002, 1220600003, 1220600004

### Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0450	mg/L
<b>Surrogates</b>				
4-Bromofluorobenzene (surr)	83	50-150		%

### Batch Information

Analytical Batch: VFC16015  
Analytical Method: AK101  
Instrument: Agilent 7890A PID/FID  
Analyst: PHK  
Analytical Date/Time: 2/14/2022 10:02:00AM

Prep Batch: VXX38365  
Prep Method: SW5030B  
Prep Date/Time: 2/14/2022 6:00:00AM  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 02/24/2022 3:18:00PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1220600 [VXX38365]  
 Blank Spike Lab ID: 1654674  
 Date Analyzed: 02/14/2022 10:55

Spike Duplicate ID: LCSD for HBN 1220600 [VXX38365]  
 Spike Duplicate Lab ID: 1654675  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1220600001, 1220600002, 1220600003, 1220600004

## Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.905	91	1.00	0.894	89	( 60-120 )	1.30	(< 20 )

### Surrogates

4-Bromofluorobenzene (surr)	0.0500		95	0.0500		93	( 50-150 )	2.20	
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## Batch Information

Analytical Batch: **VFC16015**  
 Analytical Method: **AK101**  
 Instrument: **Agilent 7890A PID/FID**  
 Analyst: **PHK**

Prep Batch: **VXX38365**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **02/14/2022 06:00**  
 Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 02/24/2022 3:18:02PM



### Method Blank

Blank ID: MB for HBN 1831279 [VXX/38365]  
Blank Lab ID: 1654671

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1220600001, 1220600002, 1220600003, 1220600004

### Results by SW8021B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.250U	0.500	0.150	ug/L
Ethylbenzene	0.500U	1.00	0.500	ug/L
o-Xylene	0.500U	1.00	0.500	ug/L
P & M -Xylene	1.00U	2.00	0.900	ug/L
Toluene	0.500U	1.00	0.500	ug/L
Xylenes (total)	1.50U	3.00	1.40	ug/L
<b>Surrogates</b>				
1,4-Difluorobenzene (surr)	97.7	77-115		%

### Batch Information

Analytical Batch: VFC16015  
Analytical Method: SW8021B  
Instrument: Agilent 7890A PID/FID  
Analyst: PHK  
Analytical Date/Time: 2/14/2022 10:02:00AM

Prep Batch: VXX38365  
Prep Method: SW5030B  
Prep Date/Time: 2/14/2022 6:00:00AM  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 02/24/2022 3:18:04PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1220600 [VXX38365]  
 Blank Spike Lab ID: 1654672  
 Date Analyzed: 02/14/2022 10:37

Spike Duplicate ID: LCSD for HBN 1220600 [VXX38365]  
 Spike Duplicate Lab ID: 1654673  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1220600001, 1220600002, 1220600003, 1220600004

## Results by SW8021B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	100	114	114	100	112	112	( 80-120 )	1.70	(< 20 )
Ethylbenzene	100	101	101	100	98.2	98	( 75-125 )	2.60	(< 20 )
o-Xylene	100	99.2	99	100	96.2	96	( 80-120 )	3.10	(< 20 )
P & M -Xylene	200	201	101	200	195	98	( 75-130 )	3.00	(< 20 )
Toluene	100	104	104	100	104	104	( 75-120 )	0.89	(< 20 )
Xylenes (total)	300	300	100	300	291	97	( 79-121 )	3.00	(< 20 )

## Surrogates

1,4-Difluorobenzene (surr)	50		107	50		106	( 77-115 )	1.30	
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## Batch Information

Analytical Batch: **VFC16015**  
 Analytical Method: **SW8021B**  
 Instrument: **Agilent 7890A PID/FID**  
 Analyst: **PHK**

Prep Batch: **VXX38365**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **02/14/2022 06:00**  
 Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL



### Method Blank

Blank ID: MB for HBN 1831277 [XXX/46053]  
Blank Lab ID: 1654665

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1220600001, 1220600002, 1220600003

### Results by 8270D SIM LV (PAH)

Parameter	Results	LOQ/CL	DL	Units
1-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0500U	0.100	0.0310	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
<b>Surrogates</b>				
2-Methylnaphthalene-d10 (surr)	68.1	42-86		%
Fluoranthene-d10 (surr)	87.6	50-97		%

### Batch Information

Analytical Batch: XMS13073  
Analytical Method: 8270D SIM LV (PAH)  
Instrument: Agilent GC 7890B/5977A SWA  
Analyst: IVM  
Analytical Date/Time: 2/17/2022 6:55:00PM

Prep Batch: XXX46053  
Prep Method: SW3535A  
Prep Date/Time: 2/16/2022 10:48:36AM  
Prep Initial Wt./Vol.: 250 mL  
Prep Extract Vol: 1 mL

Print Date: 02/24/2022 3:18:09PM



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1220600 [XXX46053]  
 Blank Spike Lab ID: 1654666  
 Date Analyzed: 02/17/2022 19:15

Spike Duplicate ID: LCSD for HBN 1220600 [XXX46053]  
 Spike Duplicate Lab ID: 1654667  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1220600001, 1220600002, 1220600003

### Results by 8270D SIM LV (PAH)

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	2	1.41	70	2	1.15	57	( 41-115 )	20.60	* (< 20)
2-Methylnaphthalene	2	1.36	68	2	1.10	55	( 39-114 )	21.20	* (< 20)
Acenaphthene	2	1.63	82	2	1.33	67	( 48-114 )	20.50	* (< 20)
Acenaphthylene	2	1.70	85	2	1.38	69	( 35-121 )	21.20	* (< 20)
Anthracene	2	1.72	86	2	1.42	71	( 53-119 )	19.00	(< 20)
Benzo(a)Anthracene	2	1.58	79	2	1.40	70	( 59-120 )	12.00	(< 20)
Benzo[a]pyrene	2	1.64	82	2	1.46	73	( 53-120 )	11.60	(< 20)
Benzo[b]Fluoranthene	2	1.62	81	2	1.48	74	( 53-126 )	9.10	(< 20)
Benzo[g,h,i]perylene	2	1.81	90	2	1.54	77	( 44-128 )	15.80	(< 20)
Benzo[k]fluoranthene	2	1.67	84	2	1.47	73	( 54-125 )	13.30	(< 20)
Chrysene	2	1.67	83	2	1.46	73	( 57-120 )	13.40	(< 20)
Dibenzo[a,h]anthracene	2	1.82	91	2	1.56	78	( 44-131 )	15.50	(< 20)
Fluoranthene	2	1.66	83	2	1.40	70	( 58-120 )	17.30	(< 20)
Fluorene	2	1.75	88	2	1.42	71	( 50-118 )	21.10	* (< 20)
Indeno[1,2,3-c,d] pyrene	2	1.77	88	2	1.52	76	( 48-130 )	15.00	(< 20)
Naphthalene	2	1.40	70	2	1.13	57	( 43-114 )	21.10	* (< 20)
Phenanthrene	2	1.74	87	2	1.43	72	( 53-115 )	19.60	(< 20)
Pyrene	2	1.65	83	2	1.38	69	( 53-121 )	18.10	(< 20)

### Surrogates

2-Methylnaphthalene-d10 (surr)	2		73	2		59	( 42-86 )	20.60	
Fluoranthene-d10 (surr)	2		87	2		74	( 50-97 )	16.00	

### Batch Information

Analytical Batch: XMS13073  
 Analytical Method: 8270D SIM LV (PAH)  
 Instrument: Agilent GC 7890B/5977A SWA  
 Analyst: IVM

Prep Batch: XXX46053  
 Prep Method: SW3535A  
 Prep Date/Time: 02/16/2022 10:48  
 Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Print Date: 02/24/2022 3:18:11PM



### Method Blank

Blank ID: MB for HBN 1831422 [XXX/46064]  
Blank Lab ID: 1655141

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1220600001, 1220600002, 1220600003

### Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.283J	0.600	0.200	mg/L
<b>Surrogates</b>				
5a Androstane (surr)	76.2	60-120		%

### Batch Information

Analytical Batch: XFC16183  
Analytical Method: AK102  
Instrument: Agilent 7890B R  
Analyst: MDT  
Analytical Date/Time: 2/23/2022 1:30:00PM

Prep Batch: XXX46064  
Prep Method: SW3520C  
Prep Date/Time: 2/22/2022 4:02:59PM  
Prep Initial Wt./Vol.: 250 mL  
Prep Extract Vol: 1 mL

Print Date: 02/24/2022 3:18:13PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1220600 [XXX46064]  
 Blank Spike Lab ID: 1655142  
 Date Analyzed: 02/23/2022 13:40

Spike Duplicate ID: LCSD for HBN 1220600  
 [XXX46064]  
 Spike Duplicate Lab ID: 1655143  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1220600001, 1220600002, 1220600003

## Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	16.6	83	20	16.6	83	( 75-125 )	0.31	(< 20 )

### Surrogates

5a Androstane (surr)	0.4		89	0.4		89	( 60-120 )	0.42	
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## Batch Information

Analytical Batch: **XFC16183**  
 Analytical Method: **AK102**  
 Instrument: **Agilent 7890B R**  
 Analyst: **MDT**

Prep Batch: **XXX46064**  
 Prep Method: **SW3520C**  
 Prep Date/Time: **02/22/2022 16:02**  
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL



## Method Blank

Blank ID: MB for HBN 1831422 [XXX/46064]  
Blank Lab ID: 1655141

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1220600001, 1220600002, 1220600003

## Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	0.250U	0.500	0.200	mg/L
<b>Surrogates</b>				
n-Triacontane-d62 (surr)	83.7	60-120		%

## Batch Information

Analytical Batch: XFC16183  
Analytical Method: AK103  
Instrument: Agilent 7890B R  
Analyst: MDT  
Analytical Date/Time: 2/23/2022 1:30:00PM

Prep Batch: XXX46064  
Prep Method: SW3520C  
Prep Date/Time: 2/22/2022 4:02:59PM  
Prep Initial Wt./Vol.: 250 mL  
Prep Extract Vol: 1 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1220600 [XXX46064]  
 Blank Spike Lab ID: 1655142  
 Date Analyzed: 02/23/2022 13:40

Spike Duplicate ID: LCSD for HBN 1220600  
 [XXX46064]  
 Spike Duplicate Lab ID: 1655143  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1220600001, 1220600002, 1220600003

## Results by AK103

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	20	17.9	89	20	18.3	91	( 60-120 )	2.10	(< 20 )
<b>Surrogates</b>									
n-Triacontane-d62 (surr)	0.4		90	0.4		92	( 60-120 )	2.50	

## Batch Information

Analytical Batch: **XFC16183**  
 Analytical Method: **AK103**  
 Instrument: **Agilent 7890B R**  
 Analyst: **MDT**

Prep Batch: **XXX46064**  
 Prep Method: **SW3520C**  
 Prep Date/Time: **02/22/2022 16:02**  
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

# 347128 CRM

**SHANNON & WILSON, INC.**  
 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS  
 2355 Hill Road  
 Fairbanks, AK 99709  
 (907) 479-0600  
 www.shannonwilson.com

# CHAIN-OF-CUSTODY RECORD

Laboratory SGS Page 1 of 1  
 Attn: J. Sawkins

Quote No. MSA-SGS-2016

Analytical Methods (include preservative if used)

1220600

Turn Around Time:  
 Normal  Rush  
 Please Specify

J-Flags:  Yes  No

Sample Identity	Lab No.	Time	Date Sampled	610 (AK101)	BTEX (AK103)	PAH (AK102)	PAH (AK102)	Total Nur	Remarks/Matrix Composition/Grab? Sample Containers
EB-11-15		1500	2/10/22	X	X	X	X	7	Groundwater
MW-111-15		1344		X	X	X	X	7	
MW-11-15		1354		X	X	X	X	7	
Trap Blank									

**Project Information**  
 Number: 62579-019  
 Name: Gustavus MW  
 Contact: KCF  
 Ongoing Project? Yes  No   
 Sampler: MSC

**Sample Receipt**  
 Total No. of Containers: 3  
 COC Seals/Intact? 3  
 Received Good Cond./Cold: 3  
 Temp: 33  
 Delivery Method: SGS


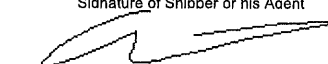
Relinquished By: 1	Relinquished By: 2	Relinquished By: 3
Signature: <u>[Signature]</u> Printed Name: <u>A. Mastus</u> Company: <u>Shannon + Wilson</u>	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____
Time: <u>0800</u> Date: <u>2/11/22</u>	Time: _____ Date: _____	Time: _____ Date: _____
Received By: 1	Received By: 2	Received By: 3
Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____	Signature: <u>[Signature]</u> Printed Name: <u>Justin A. Nelson</u> Company: <u>SGS</u>
Time: _____ Date: _____	Time: _____ Date: _____	Time: <u>12:06</u> Date: <u>2/12/22</u>

**Notes:**

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file

027 JNU 9064 8574

027-9064 8574

Shipper's Name and Address Shannon and Wilson Inc 2355 Hill Rd Fairbanks, AK 99712 USA  Tel: 907-479-0600		Shipper's Account Number 27400200733  Customer's ID Number 10926		Not Negotiable  <b>Air Waybill</b> Issued By <div style="text-align: center;">                       P.O. BOX 68900 SEATTLE, WA 98168                      800-225-2752 ALASKACARGO.COM                 </div>					
Consignee's Name and Address SGS North America 200 W Potter Drive Anchorage, AK 99518 USA  Tel: 907-562-2343		Consignee's Account Number 27400215947		Also notify          Tel:					
Issuing Carrier's Agent and City  Agent's IATA Code  Account No.		Accounting Information Shannon and Wilson Inc 2355 Hill Rd Fairbanks, AK 99712 USA  SRN/102599-019 GoldStreak		10926					
Airport of Departure (Addr. of First Carrier) and Requested Routing Juneau International Airport		Airport of Destination Anchorage		Flight/Date AS 067/11		Amount of Insurance XXX			
To By First Carrier ANC Alaska Airlines		To / By To / By		Currency USD PX		WT/VAL X			
Declared Value For Carriage NVD		Declared Value For Customs NCV		Other X					
Handling Information STORE IN COOLER WHEN POSSIBLE NOA JUSTIN 907-550-3205 AND 907-562-2343						SCI			
No of Pieces	Gross Weight	kg	lb	Commodity Item No.	Chargeable Weight	Rate / Charge	Total	Nature and Quantity of Goods (Incl. Dimensions or Volume)	
1	41.0	L	N		41.0		AS AGREED	WATER SAMPLES KEEP COOL          Dims: 21 x 14 x13 x 1    GSX COL Volume: 2.212	
1	41.0						AS AGREED		
Prepaid AS AGREED		Weight Charge Collect		Other Charges XBC 12.50					
Valuation Charge									
Tax									
Total Other Charges Due Agent									
Total Other Charges Due Carrier									
Total Prepaid AS AGREED		Total Collect		Shipper certifies that the particulars on the face hereof are correct and that insofar as any part of the consignment contains dangerous goods, such part is properly described by name and is in proper condition for carriage by air according to the applicable Dangerous Goods Regulations. I consent to the inspection of this cargo.  For: Shannon and Wilson Inc Signature of Shipper or his Agent <div style="text-align: right;">  </div>					
				<input checked="" type="checkbox"/> THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS		<input type="checkbox"/> THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS			
				Executed On (Date) 11 Feb 2022 17:15		at (Place) Juneau International		Signature of Issuing Carrier or its Agent Alaska Airlines	

# Alaska<sup>®</sup>

## AIR CARGO

P.O. BOX 68900 SEATTLE, WA 98168  
800-225-2752 ALASKACARGO.COM

### SHIPPER

Shannon and Wilson Inc  
2355 Hill Rd  
Fairbanks, AK 99712

### CONSIGNEE

SGS North America  
200 W Potter Drive  
Anchorage, AK 99518

AWB Number	Pieces	Weight	Origin / Dest	Nature of Goods	Arriving Flight Details	Customs
027-90648574	1	41.0 Lb	JNU-ANC	WATER SAMPLES	AS 067 11-Feb-2022	

Storage Locations: GSX4

1

LOCAL CHARGES :

Bonded Warehouse

Total Local Charges:	USD	0.00
VAT 6.25%:	USD	0.00
Grand Total:	USD	<b>0.00</b>

PO Number

### RECEIPT STATEMENT

The undersigned acknowledge the receipt of above mentioned consignment complete and in good condition.

Date: 12-Feb-2022

Time: 13:03

Driver: Justin

Registration: \_\_\_\_\_

Signature: 



SGS Workorder #:

1220600

1220600

Review Criteria

Condition (Yes, No, N/A)

Exceptions Noted below

Chain of Custody / Temperature Requirements

N/A Exemption permitted if sampler hand carries/delivers.

Were Custody Seals intact? Note # & location

Yes 1F 1LS

COC accompanied samples?

Yes

DOD: Were samples received in COC corresponding coolers?

N/A

N/A \*\*Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required

Temperature blank compliant\* (i.e., 0-6 °C after CF)?

Yes

Cooler ID:	1	@	3.3	°C	Therm. ID:	D50
Cooler ID:		@		°C	Therm. ID:	
Cooler ID:		@		°C	Therm. ID:	
Cooler ID:		@		°C	Therm. ID:	
Cooler ID:		@		°C	Therm. ID:	

If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.

\*If >6°C, were samples collected <8 hours ago?

N/A

If <0°C, were sample containers ice free?

N/A

Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.

Holding Time / Documentation / Sample Condition Requirements

Note: Refer to form F-083 "Sample Guide" for specific holding times.

Were samples received within holding time?

Yes

Do samples match COC\*\* (i.e., sample IDs, dates/times collected)?

Yes

\*\*Note: If times differ <1hr, record details & login per COC.

\*\*\*Note: If sample information on containers differs from COC, SGS will default to COC information.

Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)

Yes

N/A \*\*\*Exemption permitted for metals (e.g., 200.8/6020B).

Were proper containers (type/mass/volume/preservative\*\*\*) used?

Yes

Volatile / LL-Hg Requirements

Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?

Yes

Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?

Yes

Were all soil VOAs field extracted with MeOH+BFB?

N/A

Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):



## Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1220600001-A	HCL to pH < 2	OK			
1220600001-B	HCL to pH < 2	OK			
1220600001-C	HCL to pH < 2	OK			
1220600001-D	HCL to pH < 2	OK			
1220600001-E	HCL to pH < 2	OK			
1220600001-F	No Preservative Required	OK			
1220600001-G	No Preservative Required	OK			
1220600002-A	HCL to pH < 2	OK			
1220600002-B	HCL to pH < 2	OK			
1220600002-C	HCL to pH < 2	OK			
1220600002-D	HCL to pH < 2	OK			
1220600002-E	HCL to pH < 2	OK			
1220600002-F	No Preservative Required	OK			
1220600002-G	No Preservative Required	OK			
1220600003-A	HCL to pH < 2	OK			
1220600003-B	HCL to pH < 2	OK			
1220600003-C	HCL to pH < 2	OK			
1220600003-D	HCL to pH < 2	OK			
1220600003-E	HCL to pH < 2	OK			
1220600003-F	No Preservative Required	OK			
1220600003-G	No Preservative Required	OK			
1220600004-A	HCL to pH < 2	OK			
1220600004-B	HCL to pH < 2	OK			
1220600004-C	HCL to pH < 2	OK			

### Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

## Laboratory Data Review Checklist

Completed By:

Amber Masters

Title:

Environmental Scientist

Date:

March 2, 2022

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS

Laboratory Report Number:

1220600

Laboratory Report Date:

February 24, 2022

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904



Laboratory Report Date:

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all the submitted sample analyses?

Yes  No  N/A  Comments:

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

The requested analyses were conducted by SGS, North America, Inc. in Anchorage, AK.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

Cooler was received at 3.3°C.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form noted the samples arrived in good condition.

Laboratory Report Date:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes  No  N/A  Comments:

No discrepancies were noted.

- e. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

#### 4. Case Narrative

- a. Present and understandable?

Yes  No  N/A  Comments:

- b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

The case narrative notes that the relative percent difference (RPD) does not meet quality control (QC) criteria in the LCS/LCSD samples for naphthalene and 2-methylnaphthalene.

The RPD does not meet QC criteria in the PAH LCS/LCSD samples for several analytes.

- c. Were all corrective actions documented?

Yes  No  N/A  Comments:

The case narrative indicates that PAH concentrations in the associated samples are less than LOQ and not corrective actions were necessary.

- d. What is the effect on data quality/usability according to the case narrative?

Comments:

Our assessment of the data quality and usability is described in the sections below.

#### 5. Samples Results

- a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

Laboratory Report Date:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

e. Data quality or usability affected?

The data quality and/or usability was not affected; see above.

## 6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

DRO was detected below the LOQ in the method blank.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

DRO results for samples *EB-11-15* and field duplicate pair *MW-11-15/MW-111-15* are affected.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

DRO results for sample *EB-11-15* and field duplicate pair *MW-11-15/MW-111-15* have been flagged 'UB' at the LOQ. These results are considered not detected at the LOQ.

Laboratory Report Date:

- v. Data quality or usability affected?

Comments:

Data quality is affected. See above. The data are considered usable with the appropriate flags, as described above.

- b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A  Comments:

LCS/LCSD samples were analyzed for the requested analyses.

- ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

The LCS/LCSD RPD results were outside of QC objectives for 1-methylnaphthalene, 2-methylnaphthalene, acenaphthene, acenaphthylene, fluorene and naphthalene.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

PAH results for analytes 1-methylnaphthalene, 2-methylnaphthalene, acenaphthene, acenaphthylene, fluorene and naphthalene for field duplicate pair *MW-11-15/MW-111-15* are affected.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

The above listed analytes are not detected in samples *MW-11-15* and *MW-111-15*. The results are flagged 'UJ' in the analytical tables.

Laboratory Report Date:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality was affected; see above. The data are considered usable with the appropriate flags, as described above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

The laboratory analyzed an LCS and LCSD to assess laboratory accuracy and precision for all requested analyses.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

No MS/MSD were reported with this work order.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A  Comments:

No MS/MSD were reported with this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

No MS/MSD were reported with this work order. Analytical accuracy and precision are demonstrated by the LCS/LCSD.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

Laboratory Report Date:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes  No  N/A  Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A  Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

There were no surrogate recovery failures associated with this work order.

iv. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes  No  N/A  Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

Only one cooler was used to transport the samples in this work order.

iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

Laboratory Report Date:

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

No analytes were detected in the trip blank.

v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

ii. Submitted blind to lab?

Yes  No  N/A  Comments:The field duplicate pair *MW-11-15/MW-111-15* was submitted with this work orderiii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration $R_2$  = Field Duplicate ConcentrationYes  No  N/A  Comments:

RPDs are less than project objectives, where calculable.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and/or usability was not affected; see above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

The following analytes were detected in the equipment blank submitted with this work order: 2-methylnaphthalene, naphthalene, DRO, RRO, and toluene

Laboratory Report Date:

- ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Project samples *MW-11-15* and *MW-111-15* are affected. The following analytes were not detected in the project samples associated with the equipment blank: 2-methylnaphthalene, naphthalene, and toluene. No qualification of these analytes is required. The RRO results in field duplicate pair *MW-11-15/MW-111-15* have been flagged 'UB' at the LOQ due to the equipment blank detection.

DRO results have previously been flagged in samples *MW-11-15/MW-111-15* due to detections in the method blank. No further flagging is needed.

- iii. Data quality or usability affected?

Comments:

Data quality is affected, see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

- a. Defined and appropriate?

Yes  No  N/A

Comments:





## Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks  
2355 Hill Rd  
Fairbanks, AK 99707  
(907)479-0600

Report Number: **1221944**

Client Project: **102599-019 Gus MW PFAS**

Dear Kristen Freiburger,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jennifer at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

---

Jennifer Dawkins  
Project Manager  
Jennifer.Dawkins@sgs.com

Date

## Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**  
SGS Project: **1221944**  
Project Name/Site: **102599-019 Gus MW PFAS**  
Project Contact: **Kristen Freiburger**

Refer to sample receipt form for information on sample condition.

\*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 05/09/2022 4:12:10PM

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
MW-12-10	1221944001	04/28/2022	05/02/2022	Water (Surface, Eff., Ground)
MW-112-10	1221944002	04/28/2022	05/02/2022	Water (Surface, Eff., Ground)
MW-11-15	1221944003	04/28/2022	05/02/2022	Water (Surface, Eff., Ground)
Trip Blank	1221944004	04/28/2022	05/02/2022	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
8270D SIM LV (PAH)	8270 PAH SIM GC/MS LV
AK101	AK101/8021 Combo.
SW8021B	AK101/8021 Combo.
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water

Print Date: 05/09/2022 4:12:12PM

## Detectable Results Summary

Client Sample ID: **MW-11-15**

Lab Sample ID: 1221944003

### Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.730	mg/L
Residual Range Organics	0.885	mg/L

Print Date: 05/09/2022 4:12:14PM



Results of MW-12-10

Client Sample ID: MW-12-10
Client Project ID: 102599-019 Gus MW PFAS
Lab Sample ID: 1221944001
Lab Project ID: 1221944

Collection Date: 04/28/22 09:22
Received Date: 05/02/22 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: Ground Water

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with their respective results and quality indicators.

Batch Information

Analytical Batch: XMS13144
Analytical Method: 8270D SIM LV (PAH)
Analyst: MDT
Analytical Date/Time: 05/05/22 21:33
Container ID: 1221944001-F

Prep Batch: XXX46248
Prep Method: SW3535A
Prep Date/Time: 05/05/22 09:19
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL



Results of MW-12-10

Client Sample ID: MW-12-10
Client Project ID: 102599-019 Gus MW PFAS
Lab Sample ID: 1221944001
Lab Project ID: 1221944

Collection Date: 04/28/22 09:22
Received Date: 05/02/22 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: Ground Water

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC16224
Analytical Method: AK102
Analyst: MDT
Analytical Date/Time: 05/03/22 18:34
Container ID: 1221944001-D
Prep Batch: XXX46242
Prep Method: SW3520C
Prep Date/Time: 05/02/22 16:08
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC16224
Analytical Method: AK103
Analyst: MDT
Analytical Date/Time: 05/03/22 18:34
Container ID: 1221944001-D
Prep Batch: XXX46242
Prep Method: SW3520C
Prep Date/Time: 05/02/22 16:08
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL



Results of MW-12-10

Client Sample ID: MW-12-10
Client Project ID: 102599-019 Gus MW PFAS
Lab Sample ID: 1221944001
Lab Project ID: 1221944

Collection Date: 04/28/22 09:22
Received Date: 05/02/22 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: Ground Water

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Gasoline Range Organics, 0.0500 U, 0.100, 0.0450, mg/L, 1, 05/03/22 18:04

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 4-Bromofluorobenzene (surr), 75.2, 50-150, %, 1, 05/03/22 18:04

Batch Information

Analytical Batch: VFC16077
Analytical Method: AK101
Analyst: PHK
Analytical Date/Time: 05/03/22 18:04
Container ID: 1221944001-A

Prep Batch: VXX38541
Prep Method: SW5030B
Prep Date/Time: 05/03/22 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows: Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, Xylenes (total)

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 1,4-Difluorobenzene (surr), 95.3, 77-115, %, 1, 05/03/22 18:04

Batch Information

Analytical Batch: VFC16077
Analytical Method: SW8021B
Analyst: PHK
Analytical Date/Time: 05/03/22 18:04
Container ID: 1221944001-A

Prep Batch: VXX38541
Prep Method: SW5030B
Prep Date/Time: 05/03/22 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL





Results of MW-112-10

Client Sample ID: MW-112-10
Client Project ID: 102599-019 Gus MW PFAS
Lab Sample ID: 1221944002
Lab Project ID: 1221944

Collection Date: 04/28/22 09:12
Received Date: 05/02/22 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: Ground Water

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate values.

Batch Information

Analytical Batch: XMS13144
Analytical Method: 8270D SIM LV (PAH)
Analyst: MDT
Analytical Date/Time: 05/05/22 21:54
Container ID: 1221944002-F

Prep Batch: XXX46248
Prep Method: SW3535A
Prep Date/Time: 05/05/22 09:19
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL



Results of MW-112-10

Client Sample ID: MW-112-10
Client Project ID: 102599-019 Gus MW PFAS
Lab Sample ID: 1221944002
Lab Project ID: 1221944

Collection Date: 04/28/22 09:12
Received Date: 05/02/22 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: Ground Water

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC16224
Analytical Method: AK102
Analyst: MDT
Analytical Date/Time: 05/03/22 18:44
Container ID: 1221944002-D
Prep Batch: XXX46242
Prep Method: SW3520C
Prep Date/Time: 05/02/22 16:08
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC16224
Analytical Method: AK103
Analyst: MDT
Analytical Date/Time: 05/03/22 18:44
Container ID: 1221944002-D
Prep Batch: XXX46242
Prep Method: SW3520C
Prep Date/Time: 05/02/22 16:08
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL



**Results of MW-112-10**

Client Sample ID: **MW-112-10**  
Client Project ID: **102599-019 Gus MW PFAS**  
Lab Sample ID: 1221944002  
Lab Project ID: 1221944

Collection Date: 04/28/22 09:12  
Received Date: 05/02/22 08:20  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: Ground Water

**Results by Volatile Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0450	mg/L	1		05/03/22 18:22

**Surrogates**

4-Bromofluorobenzene (surr)	79.9	50-150		%	1		05/03/22 18:22
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**Batch Information**

Analytical Batch: VFC16077  
Analytical Method: AK101  
Analyst: PHK  
Analytical Date/Time: 05/03/22 18:22  
Container ID: 1221944002-A

Prep Batch: VXX38541  
Prep Method: SW5030B  
Prep Date/Time: 05/03/22 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.250 U	0.500	0.150	ug/L	1		05/03/22 18:22
Ethylbenzene	0.500 U	1.00	0.500	ug/L	1		05/03/22 18:22
o-Xylene	0.500 U	1.00	0.500	ug/L	1		05/03/22 18:22
P & M -Xylene	1.00 U	2.00	0.900	ug/L	1		05/03/22 18:22
Toluene	0.500 U	1.00	0.500	ug/L	1		05/03/22 18:22
Xylenes (total)	1.50 U	3.00	1.40	ug/L	1		05/03/22 18:22

**Surrogates**

1,4-Difluorobenzene (surr)	95	77-115		%	1		05/03/22 18:22
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**Batch Information**

Analytical Batch: VFC16077  
Analytical Method: SW8021B  
Analyst: PHK  
Analytical Date/Time: 05/03/22 18:22  
Container ID: 1221944002-A

Prep Batch: VXX38541  
Prep Method: SW5030B  
Prep Date/Time: 05/03/22 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



Results of MW-11-15

Client Sample ID: MW-11-15
Client Project ID: 102599-019 Gus MW PFAS
Lab Sample ID: 1221944003
Lab Project ID: 1221944

Collection Date: 04/28/22 11:21
Received Date: 05/02/22 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: Ground Water

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate values.

Batch Information

Analytical Batch: XMS13144
Analytical Method: 8270D SIM LV (PAH)
Analyst: MDT
Analytical Date/Time: 05/05/22 22:14
Container ID: 1221944003-F

Prep Batch: XXX46248
Prep Method: SW3535A
Prep Date/Time: 05/05/22 09:19
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL



Results of MW-11-15

Client Sample ID: MW-11-15
Client Project ID: 102599-019 Gus MW PFAS
Lab Sample ID: 1221944003
Lab Project ID: 1221944

Collection Date: 04/28/22 11:21
Received Date: 05/02/22 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: Ground Water

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC16224
Analytical Method: AK102
Analyst: MDT
Analytical Date/Time: 05/03/22 18:54
Container ID: 1221944003-D
Prep Batch: XXX46242
Prep Method: SW3520C
Prep Date/Time: 05/02/22 16:08
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC16224
Analytical Method: AK103
Analyst: MDT
Analytical Date/Time: 05/03/22 18:54
Container ID: 1221944003-D
Prep Batch: XXX46242
Prep Method: SW3520C
Prep Date/Time: 05/02/22 16:08
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL



Results of MW-11-15

Client Sample ID: MW-11-15
Client Project ID: 102599-019 Gus MW PFAS
Lab Sample ID: 1221944003
Lab Project ID: 1221944

Collection Date: 04/28/22 11:21
Received Date: 05/02/22 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: Ground Water

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Gasoline Range Organics, 0.0500 U, 0.100, 0.0450, mg/L, 1, 05/03/22 18:40

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 4-Bromofluorobenzene (surr), 82.9, 50-150, %, 1, 05/03/22 18:40

Batch Information

Analytical Batch: VFC16077
Analytical Method: AK101
Analyst: PHK
Analytical Date/Time: 05/03/22 18:40
Container ID: 1221944003-A

Prep Batch: VXX38541
Prep Method: SW5030B
Prep Date/Time: 05/03/22 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows: Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, Xylenes (total)

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 1,4-Difluorobenzene (surr), 95.4, 77-115, %, 1, 05/03/22 18:40

Batch Information

Analytical Batch: VFC16077
Analytical Method: SW8021B
Analyst: PHK
Analytical Date/Time: 05/03/22 18:40
Container ID: 1221944003-A

Prep Batch: VXX38541
Prep Method: SW5030B
Prep Date/Time: 05/03/22 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



### Results of Trip Blank

Client Sample ID: **Trip Blank**  
 Client Project ID: **102599-019 Gus MW PFAS**  
 Lab Sample ID: 1221944004  
 Lab Project ID: 1221944

Collection Date: 04/28/22 09:12  
 Received Date: 05/02/22 08:20  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: Ground Water

### Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0450	mg/L	1		05/03/22 17:46

#### Surrogates

4-Bromofluorobenzene (surr)	77.4	50-150		%	1		05/03/22 17:46
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### Batch Information

Analytical Batch: VFC16077  
 Analytical Method: AK101  
 Analyst: PHK  
 Analytical Date/Time: 05/03/22 17:46  
 Container ID: 1221944004-A

Prep Batch: VXX38541  
 Prep Method: SW5030B  
 Prep Date/Time: 05/03/22 06:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.250 U	0.500	0.150	ug/L	1		05/03/22 17:46
Ethylbenzene	0.500 U	1.00	0.500	ug/L	1		05/03/22 17:46
o-Xylene	0.500 U	1.00	0.500	ug/L	1		05/03/22 17:46
P & M -Xylene	1.00 U	2.00	0.900	ug/L	1		05/03/22 17:46
Toluene	0.500 U	1.00	0.500	ug/L	1		05/03/22 17:46
Xylenes (total)	1.50 U	3.00	1.40	ug/L	1		05/03/22 17:46

#### Surrogates

1,4-Difluorobenzene (surr)	95.1	77-115		%	1		05/03/22 17:46
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### Batch Information

Analytical Batch: VFC16077  
 Analytical Method: SW8021B  
 Analyst: PHK  
 Analytical Date/Time: 05/03/22 17:46  
 Container ID: 1221944004-A

Prep Batch: VXX38541  
 Prep Method: SW5030B  
 Prep Date/Time: 05/03/22 06:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Method Blank

Blank ID: MB for HBN 1835726 [VXX/38541]  
Blank Lab ID: 1662547

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1221944001, 1221944002, 1221944003, 1221944004

## Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0450	mg/L
<b>Surrogates</b>				
4-Bromofluorobenzene (surr)	79.4	50-150		%

## Batch Information

Analytical Batch: VFC16077  
Analytical Method: AK101  
Instrument: Agilent 7890A PID/FID  
Analyst: PHK  
Analytical Date/Time: 5/3/2022 12:16:00PM

Prep Batch: VXX38541  
Prep Method: SW5030B  
Prep Date/Time: 5/3/2022 6:00:00AM  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



## Blank Spike Summary

Blank Spike ID: LCS for HBN 1221944 [VXX38541]  
 Blank Spike Lab ID: 1662548  
 Date Analyzed: 05/03/2022 13:09

Spike Duplicate ID: LCSD for HBN 1221944 [VXX38541]  
 Spike Duplicate Lab ID: 1662549  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1221944001, 1221944002, 1221944003, 1221944004

## Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.942	94	1.00	0.974	97	( 60-120 )	3.30	(< 20 )
<b>Surrogates</b>									
4-Bromofluorobenzene (surr)	0.0500		90	0.0500		96	( 50-150 )	6.90	

## Batch Information

Analytical Batch: VFC16077  
 Analytical Method: AK101  
 Instrument: Agilent 7890A FID  
 Analyst: PHK

Prep Batch: VXX38541  
 Prep Method: SW5030B  
 Prep Date/Time: 05/03/2022 06:00  
 Spike Init Wt./Vol.: 0.0500 mg/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 0.0500 mg/L Extract Vol: 5 mL



### Method Blank

Blank ID: MB for HBN 1835726 [VXX/38541]  
Blank Lab ID: 1662547

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1221944001, 1221944002, 1221944003, 1221944004

### Results by SW8021B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.250U	0.500	0.150	ug/L
Ethylbenzene	0.500U	1.00	0.500	ug/L
o-Xylene	0.500U	1.00	0.500	ug/L
P & M -Xylene	1.00U	2.00	0.900	ug/L
Toluene	0.500U	1.00	0.500	ug/L
Xylenes (total)	1.50U	3.00	1.40	ug/L
<b>Surrogates</b>				
1,4-Difluorobenzene (surr)	96.2	77-115		%

### Batch Information

Analytical Batch: VFC16077  
Analytical Method: SW8021B  
Instrument: Agilent 7890A PID/FID  
Analyst: PHK  
Analytical Date/Time: 5/3/2022 12:16:00PM

Prep Batch: VXX38541  
Prep Method: SW5030B  
Prep Date/Time: 5/3/2022 6:00:00AM  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 05/09/2022 4:12:22PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1221944 [VXX38541]  
 Blank Spike Lab ID: 1662550  
 Date Analyzed: 05/03/2022 12:51

Spike Duplicate ID: LCSD for HBN 1221944 [VXX38541]  
 Spike Duplicate Lab ID: 1662551  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1221944001, 1221944002, 1221944003, 1221944004

## Results by SW8021B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	100	109	109	100	109	109	( 80-120 )	0.28	(< 20 )
Ethylbenzene	100	92.8	93	100	93.8	94	( 75-125 )	1.10	(< 20 )
o-Xylene	100	89.1	89	100	88.6	89	( 80-120 )	0.57	(< 20 )
P & M -Xylene	200	180	90	200	181	91	( 75-130 )	0.28	(< 20 )
Toluene	100	101	101	100	103	103	( 75-120 )	2.10	(< 20 )
Xylenes (total)	300	270	90	300	269	90	( 79-121 )	0.00	(< 20 )

## Surrogates

1,4-Difluorobenzene (surr)	50		101	50		100	( 77-115 )	0.89	
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## Batch Information

Analytical Batch: **VFC16077**  
 Analytical Method: **SW8021B**  
 Instrument: **Agilent 7890A PID/FID**  
 Analyst: **PHK**

Prep Batch: **VXX38541**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **05/03/2022 06:00**  
 Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL

## Method Blank

Blank ID: MB for HBN 1835654 [XXX/46242]

Blank Lab ID: 1662173

QC for Samples:

1221944001, 1221944002, 1221944003

Matrix: Water (Surface, Eff., Ground)

## Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.300U	0.600	0.200	mg/L
<b>Surrogates</b>				
5a Androstane (surr)	70.9	60-120		%

## Batch Information

Analytical Batch: XFC16224

Analytical Method: AK102

Instrument: Agilent 7890B R

Analyst: MDT

Analytical Date/Time: 5/3/2022 9:59:00AM

Prep Batch: XXX46242

Prep Method: SW3520C

Prep Date/Time: 5/2/2022 4:08:58PM

Prep Initial Wt./Vol.: 250 mL

Prep Extract Vol: 1 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1221944 [XXX46242]  
 Blank Spike Lab ID: 1662174  
 Date Analyzed: 05/03/2022 10:09

Spike Duplicate ID: LCSD for HBN 1221944 [XXX46242]  
 Spike Duplicate Lab ID: 1662175  
 Matrix: Water ( Surface, Eff. , Ground)

QC for Samples : 1221944001, 1221944002, 1221944003

## Results by AK102

Parameter	Blank Spike (mg/ L)			Spike Duplicate (mg/ L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec ( %)	Spike	Result	Rec ( %)			
Diethyl Rang e Organics	20	19.7	99	20	16.5	83	( 75-125 )	17.70	(<20 )

### Surrogates

5a Androstane ( s ur)	0.4		111	0.4		103	( 60-120 )	7.70	
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## Batch Information

Analytical Batch: **XFC16224**  
 Analytical Method: **AK102**  
 Instrument: **Agilent 7890B R**  
 Analyst: **MDT**

Prep Batch: **XXX46242**  
 Prep Method: **SW3520C**  
 Prep Date/Time: **05/02/2022 16:08**  
 Spike Init Wt. /Vol. : 0.4 mg/ L Extract Vol: 1 mL  
 Dupe Init Wt. / Vol. : 0.4 mg/L Ex tract Vol: 1 mL

## Method Blank

Blank ID: MB for HBN 1835654 [XXX/46242]

Blank Lab ID: 1662173

QC for Samples:

1221944001, 1221944002, 1221944003

Matrix: Water (Surface, Eff., Ground)

## Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	0.250U	0.500	0.200	mg/L
<b>Surrogates</b>				
n-Triacontane-d62 (surr)	90.1	60-120		%

## Batch Information

Analytical Batch: XFC16224

Analytical Method: AK103

Instrument: Agilent 7890B R

Analyst: MDT

Analytical Date/Time: 5/3/2022 9:59:00AM

Prep Batch: XXX46242

Prep Method: SW3520C

Prep Date/Time: 5/2/2022 4:08:58PM

Prep Initial Wt./Vol.: 250 mL

Prep Extract Vol: 1 mL

Print Date: 05/09/2022 4:12:29PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1221944 [XXX46242]  
 Blank Spike Lab ID: 1662174  
 Date Analyzed: 05/03/2022 10:09

Spike Duplicate ID: LCSD for HBN 1221944  
 [XXX46242]  
 Spike Duplicate Lab ID: 1662175  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1221944001, 1221944002, 1221944003

## Results by AK103

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	20	20.7	103	20	18.1	91	( 60-120 )	13.10	(< 20 )
<b>Surrogates</b>									
n-Triacontane-d62 (surr)	0.4		101	0.4		87	( 60-120 )	15.30	

## Batch Information

Analytical Batch: **XFC16224**  
 Analytical Method: **AK103**  
 Instrument: **Agilent 7890B R**  
 Analyst: **MDT**

Prep Batch: **XXX46242**  
 Prep Method: **SW3520C**  
 Prep Date/Time: **05/02/2022 16:08**  
 Spike Init Wt./Vol.: 0.4 mg/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 0.4 mg/L Extract Vol: 1 mL

## Method Blank

Blank ID: MB for HBN 1835760 [XXX/46248]  
 Blank Lab ID: 1662691

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1221944001, 1221944002, 1221944003

## Results by 8270D SIM LV (PAH)

Parameter	Results	LOQ/CL	DL	Units
1-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0183J	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0208J	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0500U	0.100	0.0310	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
<b>Surrogates</b>				
2-Methylnaphthalene-d10 (surr)	52.3	42-86		%
Fluoranthene-d10 (surr)	66	50-97		%

## Batch Information

Analytical Batch: XMS13144  
 Analytical Method: 8270D SIM LV (PAH)  
 Instrument: Agilent GC 7890B/5977A SWA  
 Analyst: MDT  
 Analytical Date/Time: 5/5/2022 8:32:00PM

Prep Batch: XXX46248  
 Prep Method: SW3535A  
 Prep Date/Time: 5/5/2022 9:19:55AM  
 Prep Initial Wt./Vol.: 250 mL  
 Prep Extract Vol: 1 mL



## Blank Spike Summary

Blank Spike ID: LCS for HBN 1221944 [XXX46248]  
 Blank Spike Lab ID: 1662692  
 Date Analyzed: 05/05/2022 20:52

Spike Duplicate ID: LCSD for HBN 1221944  
 [XXX46248]  
 Spike Duplicate Lab ID: 1662693  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1221944001, 1221944002, 1221944003

## Results by 8270D SIM LV (PAH)

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	2	1.47	73	2	1.28	64	( 41-115 )	13.80	(< 20 )
2-Methylnaphthalene	2	1.43	71	2	1.28	64	( 39-114 )	11.10	(< 20 )
Acenaphthene	2	1.65	82	2	1.49	74	( 48-114 )	10.20	(< 20 )
Acenaphthylene	2	1.68	84	2	1.56	78	( 35-121 )	7.00	(< 20 )
Anthracene	2	1.73	87	2	1.61	81	( 53-119 )	7.10	(< 20 )
Benzo(a)Anthracene	2	1.69	85	2	1.64	82	( 59-120 )	3.30	(< 20 )
Benzo[a]pyrene	2	1.80	90	2	1.77	88	( 53-120 )	1.60	(< 20 )
Benzo[b]Fluoranthene	2	1.80	90	2	1.77	88	( 53-126 )	1.80	(< 20 )
Benzo[g,h,i]perylene	2	1.88	94	2	1.85	92	( 44-128 )	1.70	(< 20 )
Benzo[k]fluoranthene	2	1.84	92	2	1.83	92	( 54-125 )	0.72	(< 20 )
Chrysene	2	1.78	89	2	1.71	86	( 57-120 )	3.90	(< 20 )
Dibenzo[a,h]anthracene	2	1.92	96	2	1.88	94	( 44-131 )	1.80	(< 20 )
Fluoranthene	2	1.71	86	2	1.70	85	( 58-120 )	0.44	(< 20 )
Fluorene	2	1.74	87	2	1.56	78	( 50-118 )	11.10	(< 20 )
Indeno[1,2,3-c,d] pyrene	2	1.85	93	2	1.81	91	( 48-130 )	2.20	(< 20 )
Naphthalene	2	1.42	71	2	1.30	65	( 43-114 )	8.30	(< 20 )
Phenanthrene	2	1.74	87	2	1.61	81	( 53-115 )	7.40	(< 20 )
Pyrene	2	1.72	86	2	1.70	85	( 53-121 )	1.40	(< 20 )
<b>Surrogates</b>									
2-Methylnaphthalene-d10 (surr)	2		56	2		54	( 42-86 )	5.10	
Fluoranthene-d10 (surr)	2		74	2		72	( 50-97 )	1.80	

## Batch Information

Analytical Batch: XMS13144  
 Analytical Method: 8270D SIM LV (PAH)  
 Instrument: Agilent GC 7890B/5977A SWA  
 Analyst: MDT

Prep Batch: XXX46248  
 Prep Method: SW3535A  
 Prep Date/Time: 05/05/2022 09:19  
 Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL



**Review Criteria**

Condition (Yes, No, N/A)

**Exceptions Noted below**

**Chain of Custody / Temperature Requirements**

*Note: Temperature and COC seal information is found on the chain of custody form*

DOD only: Did all sample coolers have a corresponding COC? **N/A**

If <0°C, were sample containers ice free? **N/A**

Note containers received with ice:

Identify any containers received at non-compliant temperature:

*(Use form FS-0029 if more space is needed)*

**Holding Time / Documentation / Sample Condition Requirements**

*Note: Refer to form F-083 "Sample Guide" for specific holding times and sample containers.*

Were samples received within analytical holding time? **Yes**

Do sample labels match COC? Record discrepancies. **Yes**

**Note:** If information on containers differs from COC, default to COC information for login. If times differ <1hr, record details & login per COC.

Were analytical requests clear? **Yes**

*(i.e. method is specified for analyses with multiple option for method (Eg, BTEX 8021 vs 8260, Metals 6020 vs 200.8)*

Were proper containers (type/mass/volume/preservative) used? **Yes**

Note: Exemption for metals analysis by 200.8/6020 in water.

**Volatile Analysis Requirements (VOC, GRO, LL-Hg, etc.)**

Were all soil VOAs received with a corresponding % solids container? **N/A**

Were Trip Blanks (e.g., VOAs, LL-Hg) in cooler with samples? **Yes**

Were all water VOA vials free of headspace (e.g., bubbles ≤ 6mm)? **Yes**

Were all soil VOAs field extracted with Methanol+BFB? **N/A**

**Note to Client:** Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

**Additional notes (if applicable):**



## Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1221944001-A	HCL to pH < 2	OK			
1221944001-B	HCL to pH < 2	OK			
1221944001-C	HCL to pH < 2	OK			
1221944001-D	HCL to pH < 2	OK			
1221944001-E	HCL to pH < 2	OK			
1221944001-F	No Preservative Required	OK			
1221944001-G	No Preservative Required	OK			
1221944002-A	HCL to pH < 2	OK			
1221944002-B	HCL to pH < 2	OK			
1221944002-C	HCL to pH < 2	OK			
1221944002-D	HCL to pH < 2	OK			
1221944002-E	HCL to pH < 2	OK			
1221944002-F	No Preservative Required	OK			
1221944002-G	No Preservative Required	OK			
1221944003-A	HCL to pH < 2	OK			
1221944003-B	HCL to pH < 2	OK			
1221944003-C	HCL to pH < 2	OK			
1221944003-D	HCL to pH < 2	OK			
1221944003-E	HCL to pH < 2	OK			
1221944003-F	No Preservative Required	OK			
1221944003-G	No Preservative Required	OK			
1221944004-A	HCL to pH < 2	OK			
1221944004-B	HCL to pH < 2	OK			
1221944004-C	HCL to pH < 2	OK			

### Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

## Laboratory Data Review Checklist

Completed By:

Justin Risley

Title:

Engineering Staff

Date:

May 10, 2022

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS

Laboratory Report Number:

1221944

Laboratory Report Date:

May 9, 2022

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

Laboratory Report Date:

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all the submitted sample analyses?

Yes  No  N/A  Comments:

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

The requested analyses were conducted by SGS, North America, Inc. in Anchorage, AK.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

Cooler was received at 3.3°C.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form noted the samples arrived in good condition.

Laboratory Report Date:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes  No  N/A  Comments:

No discrepancies were noted.

- e. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

#### 4. Case Narrative

- a. Present and understandable?

Yes  No  N/A  Comments:

- b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

No discrepancies, errors, or QC failures were identified by the lab.

- c. Were all corrective actions documented?

Yes  No  N/A  Comments:

- d. What is the effect on data quality/usability according to the case narrative?

Comments:

Our assessment of the data quality and usability is described in the sections below.

#### 5. Samples Results

- a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

- b. All applicable holding times met?

Yes  No  N/A  Comments:

Laboratory Report Date:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

e. Data quality or usability affected?

The data quality and/or usability was not affected; see above.

## 6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

Benzo(a)anthracene and benzo[b]fluoranthene were detected below the LOQ.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

These analytes were not detected in the associated project samples; therefore, no qualifications are required.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

v. Data quality or usability affected?

Comments:

Data quality is not affected. See above.



Laboratory Report Date:

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A  Comments:

LCS/LCSD samples were analyzed for the requested analyses.

- ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A  Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; %R and RPD were within acceptable limits.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

N/A; see above.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality was not affected; see above.

Laboratory Report Date:

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

- i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

The laboratory analyzed an LCS and LCSD samples to assess laboratory accuracy and precision for all requested analyses.

- ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

No MS/MSD were reported with this work order.

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A  Comments:

No MS/MSD were reported with this work order.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

No MS/MSD were reported with this work order. Analytical accuracy and precision are demonstrated by the LCS/LCSD.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes  No  N/A  Comments:

Laboratory Report Date:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A  Comments:

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

There were no surrogate recovery failures associated with this work order.

- iv. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes  No  N/A  Comments:

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

Only one cooler was used to transport the samples in this work order.

- iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

No analytes were detected in the trip blank.

- v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

Laboratory Report Date:

## f. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

- ii. Submitted blind to lab?

Yes  No  N/A  Comments:The field duplicate pair *MW-12-10/MW-112-10* was submitted with this work order

- iii. Precision – All relative percent differences (RPD) less than specified project objectives?
- 
- (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration $R_2$  = Field Duplicate ConcentrationYes  No  N/A  Comments:

Results were not calculable, as the analytes were not detected in the duplicate pair.

- iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and/or usability was not affected; see above.

- g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

Equipment blank samples were submitted for PFAS analysis. Due to the absence of petroleum compounds in historical samples, an EB was not submitted for the analyses on this report.

- i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

An equipment blank was no submitted with the work order; see above.

- ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

- iii. Data quality or usability affected?

Comments:

Data quality is not affected, see above.

1221944

Laboratory Report Date:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

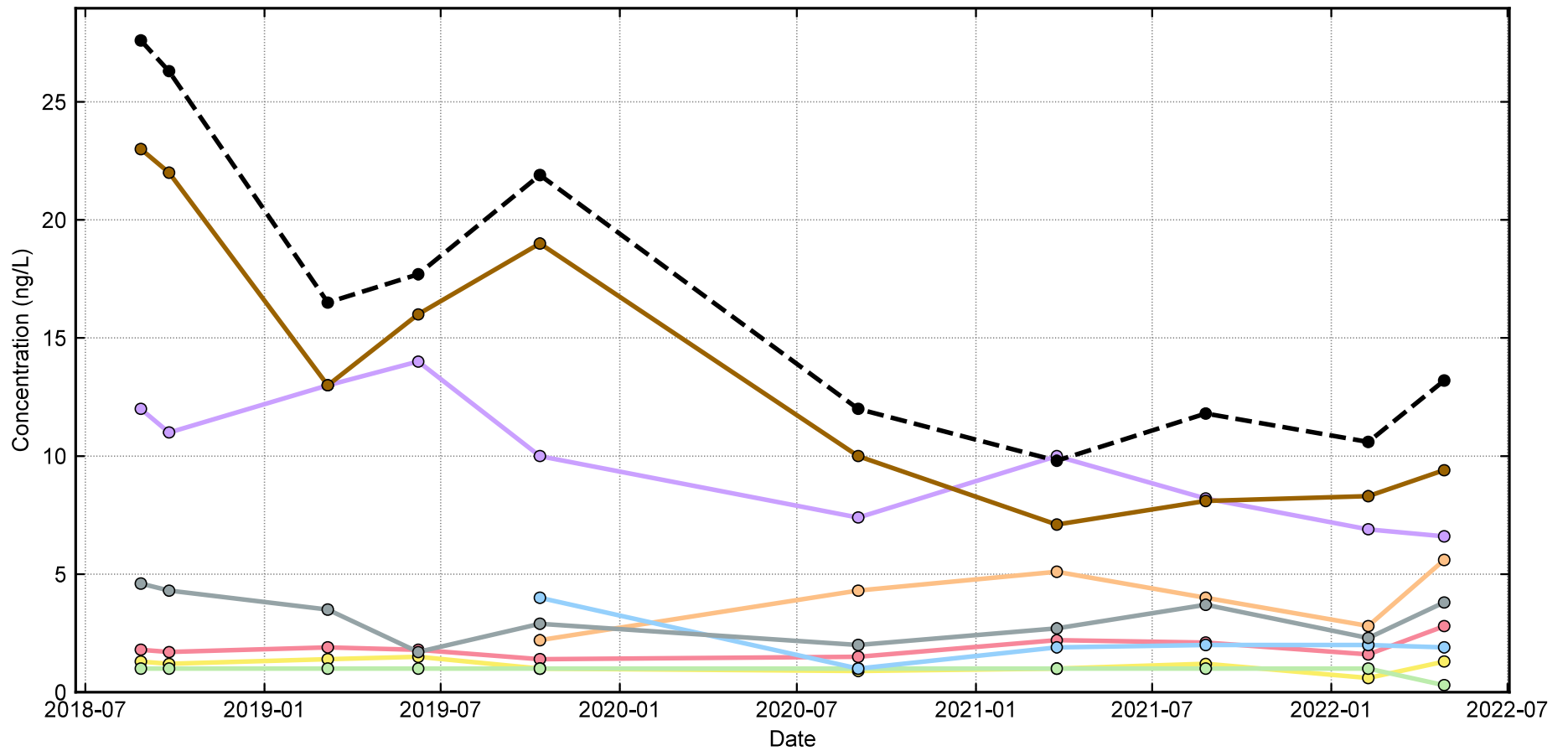
Yes  No  N/A

Comments:

Appendix D

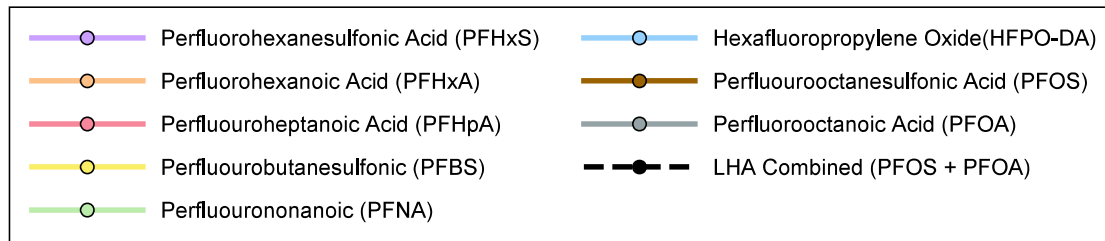
# Historical Data Plots

APPENDIX D: HISTORICAL DATA PLOTS



Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



Gustavus Airport Quarterly Groundwater  
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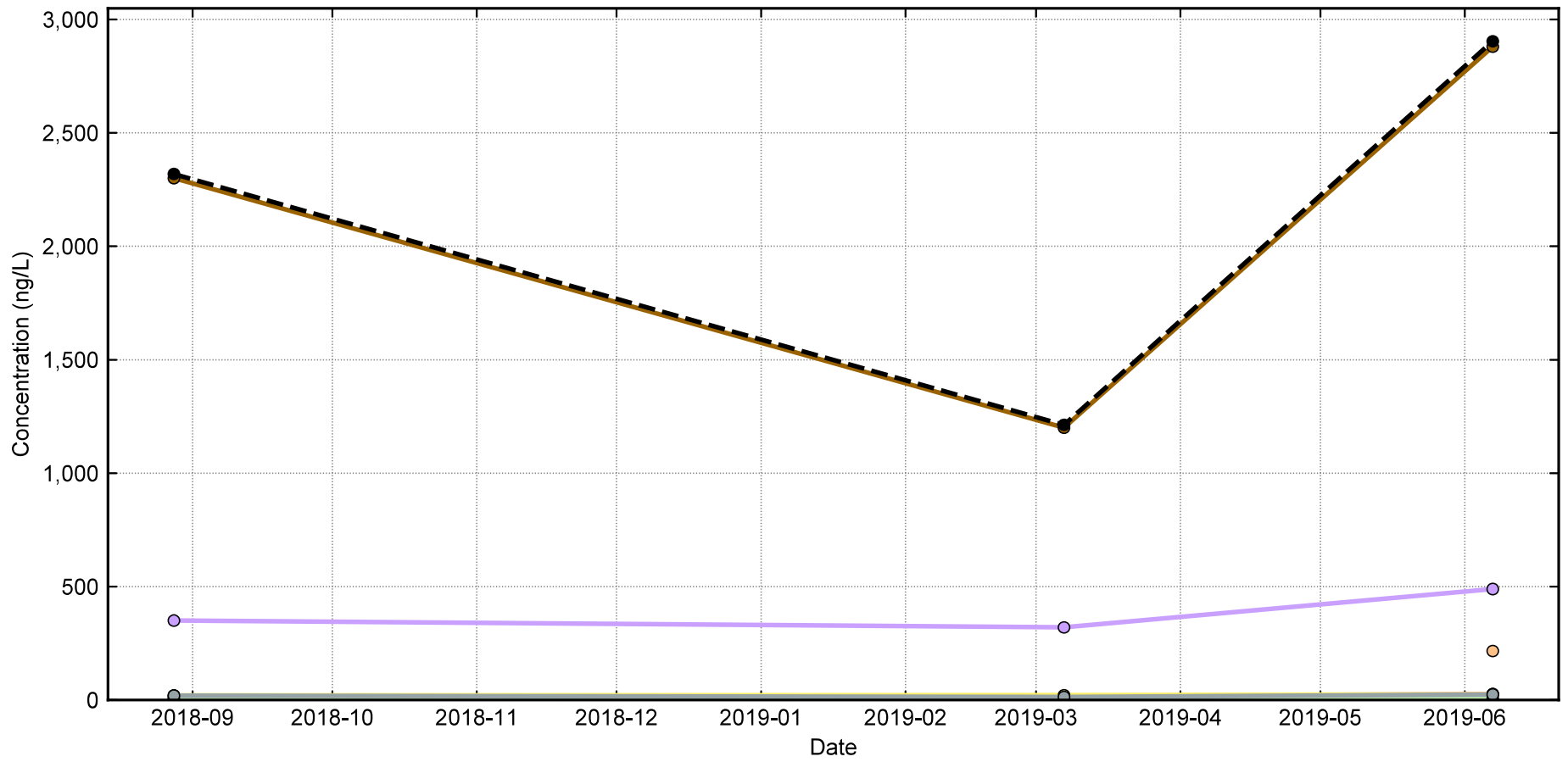
**QUARTERLY LINE GRAPH**

**NPS WELL**

May 2023 102599-023

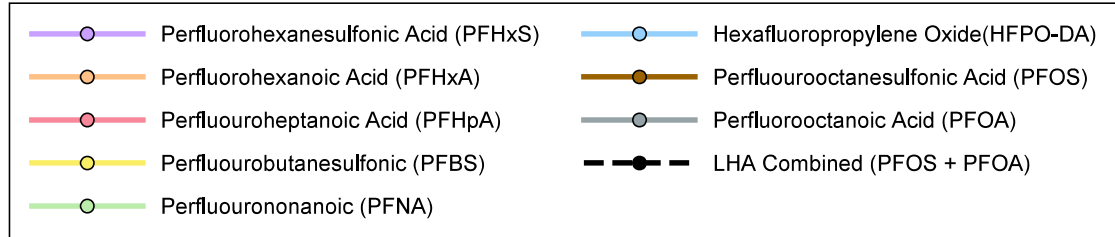
**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants **Figure D.1**

Figure D.1



Notes:

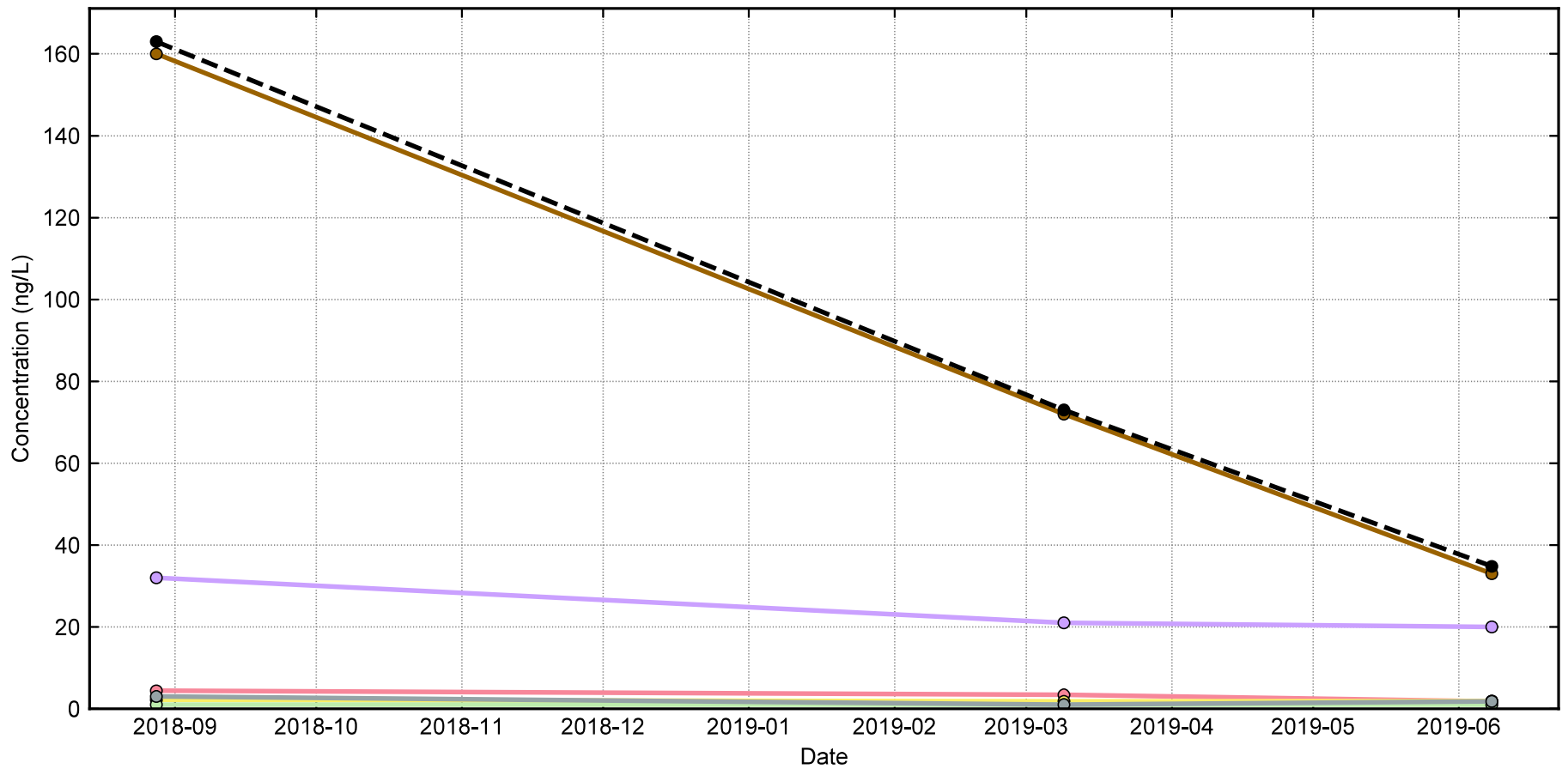
- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>PW-001</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.2</b>

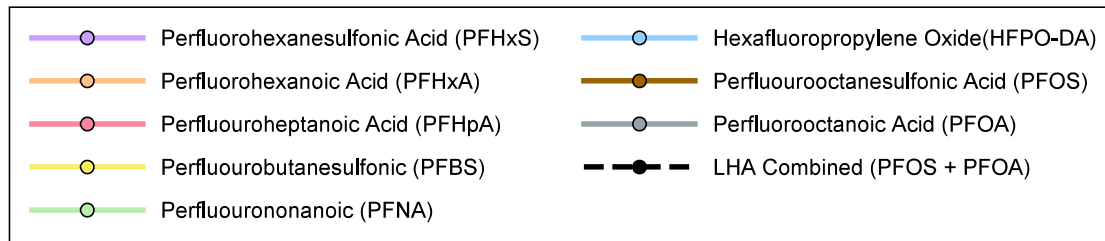
Figure D.2





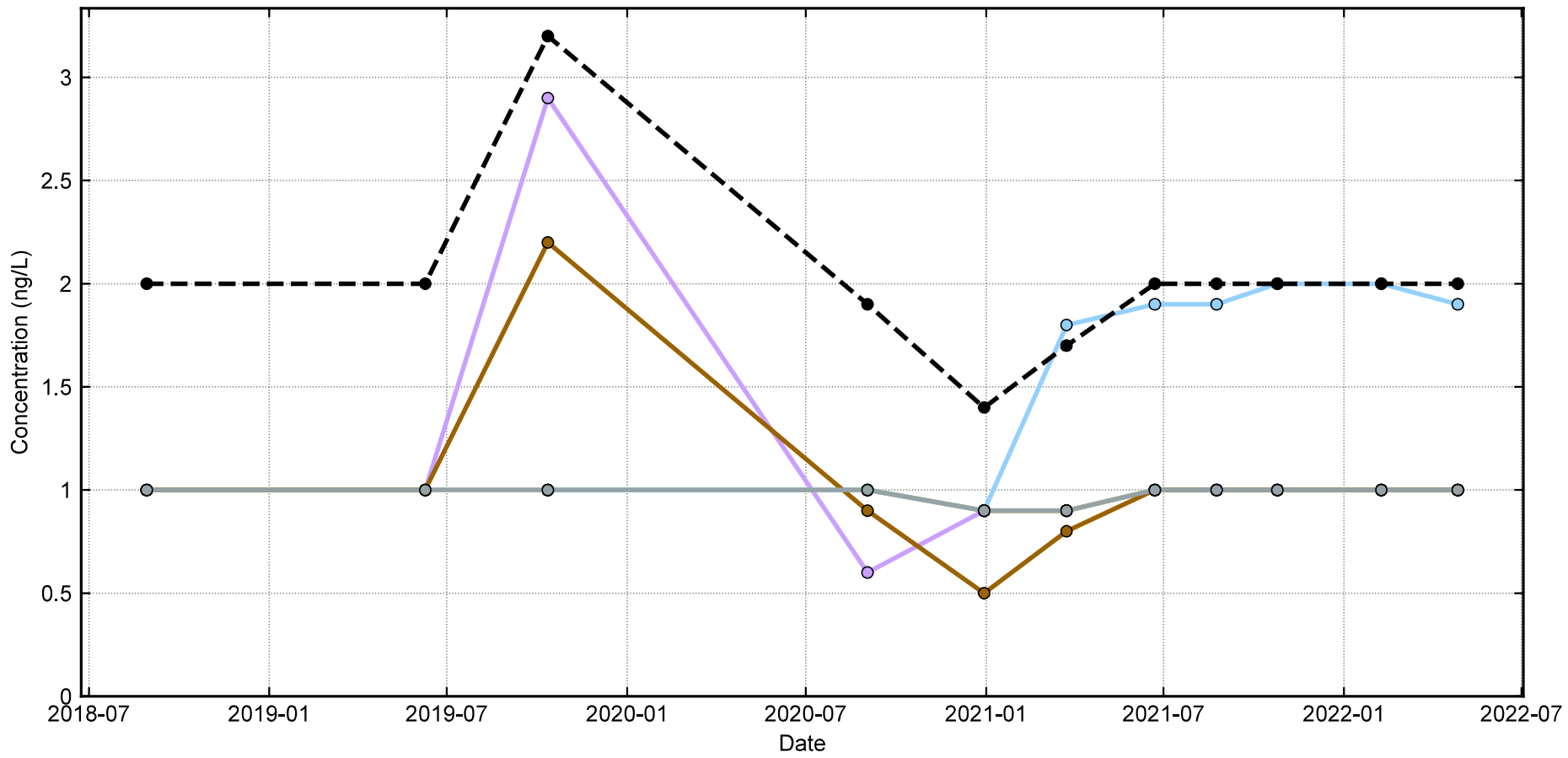
Notes:

1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
2. Duplicate values were assigned to be the higher of the two results.
3. J-flagged values were assigned to be the estimated value reported.



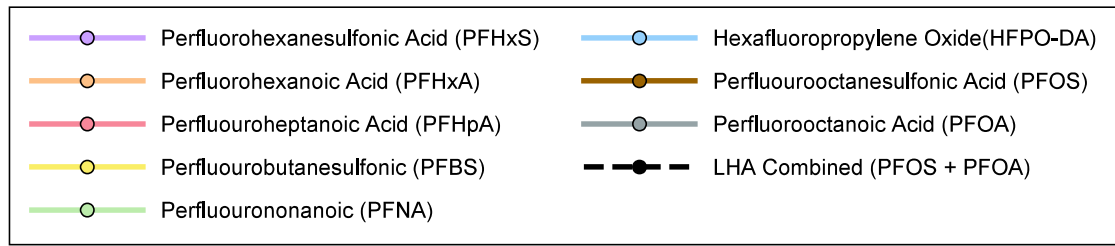
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>PW-002</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.3</b>

Figure D.3



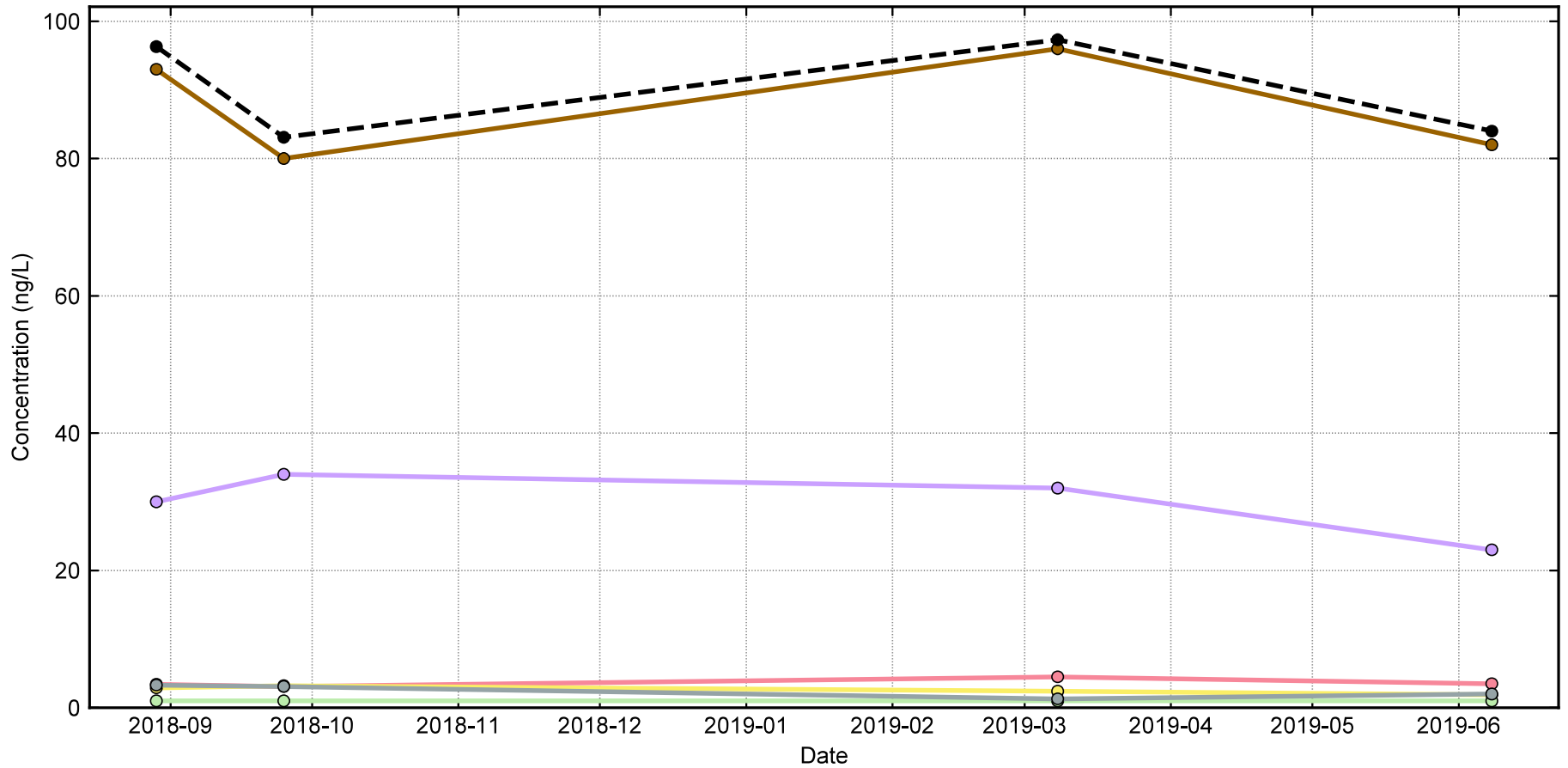
Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



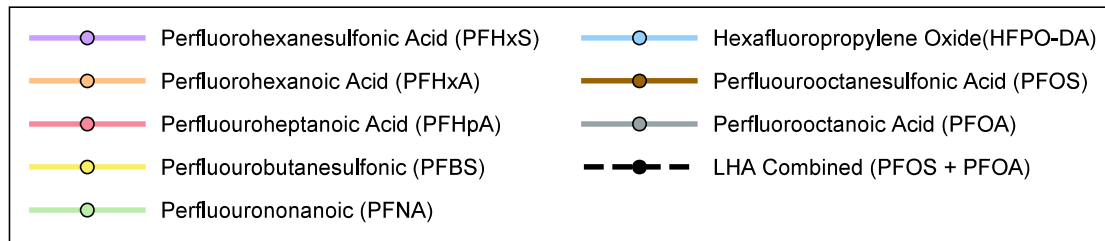
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>PW-010</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.4</b>

Figure D.4



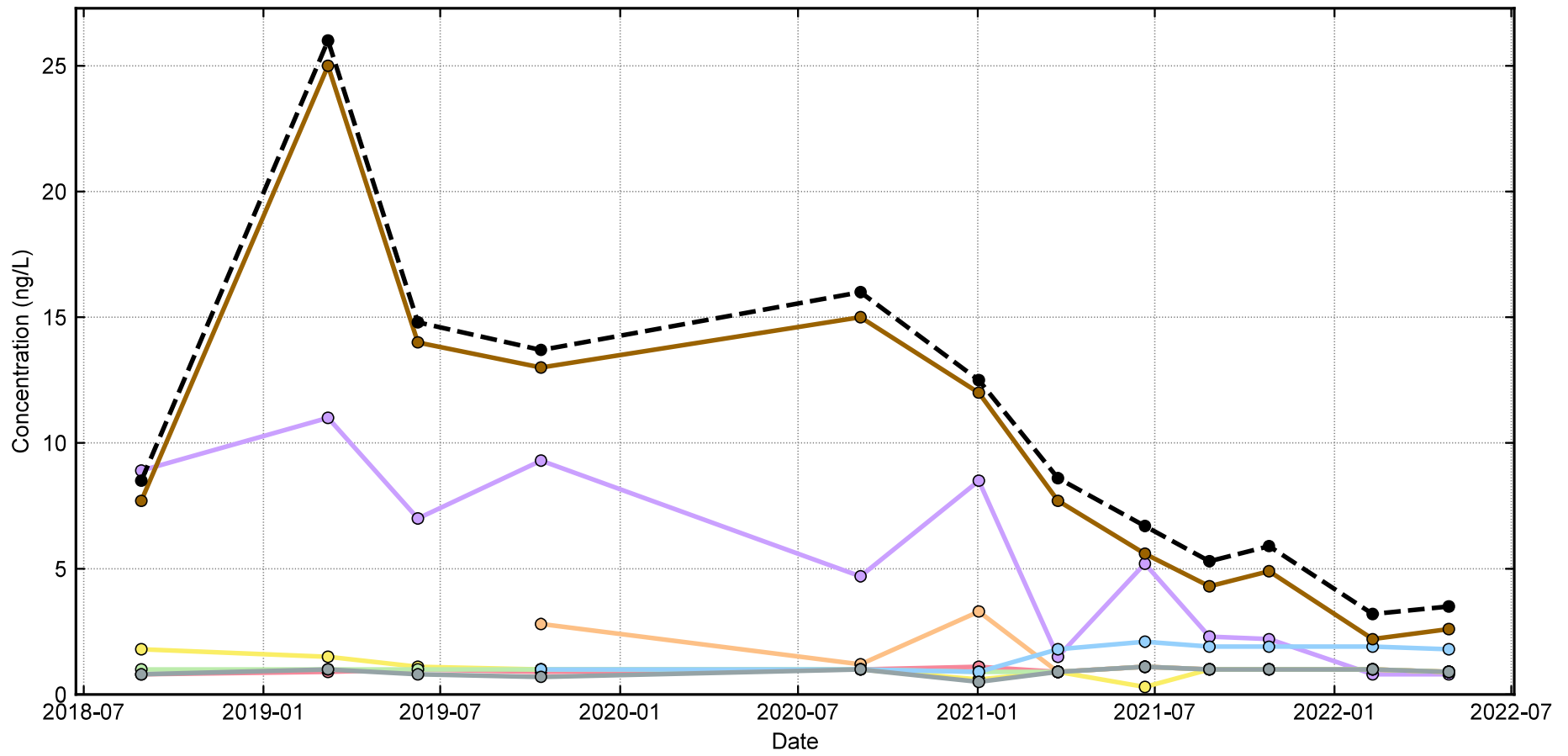
Notes:

1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
2. Duplicate values were assigned to be the higher of the two results.
3. J-flagged values were assigned to be the estimated value reported.



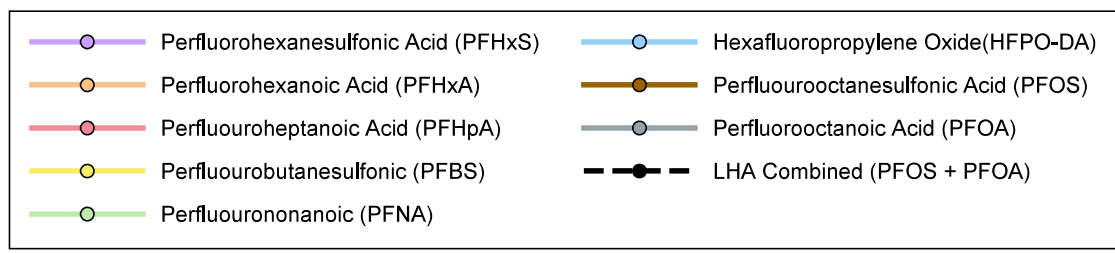
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>PW-011</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.5</b>

Figure D.5



Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



Gustavus Airport Quarterly Groundwater  
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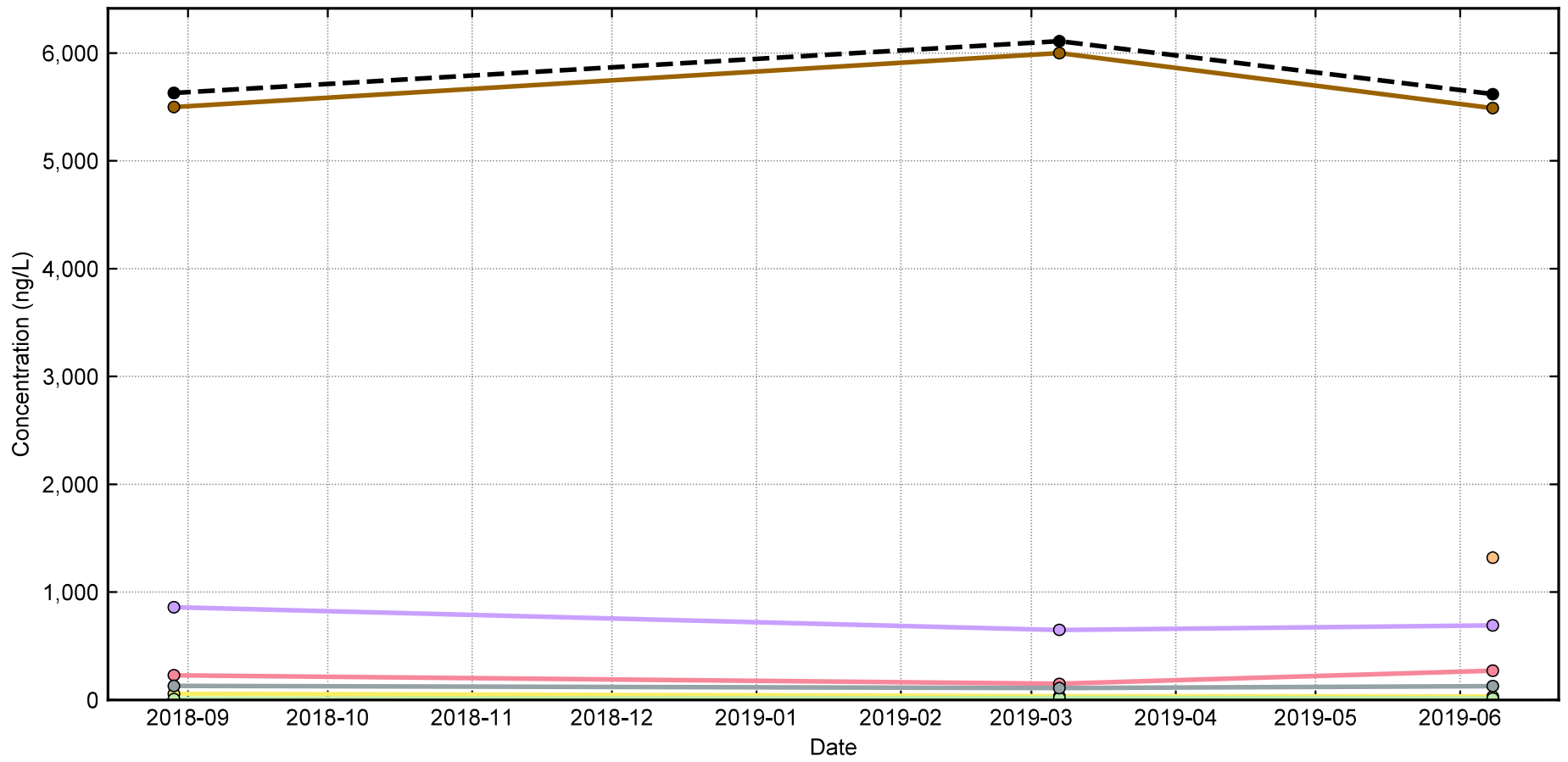
**QUARTERLY LINE GRAPH**

**PW-012**

May 2023 102599-023

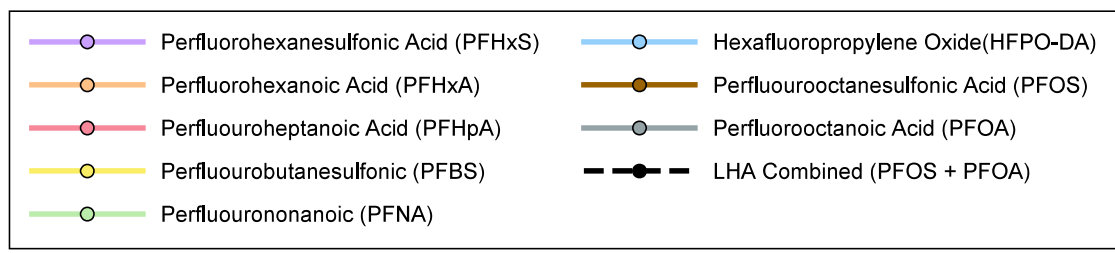
**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants **Figure D.6**

Figure D.6



Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



Gustavus Airport Quarterly Groundwater Monitoring Summary  
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**QUARTERLY LINE GRAPH**

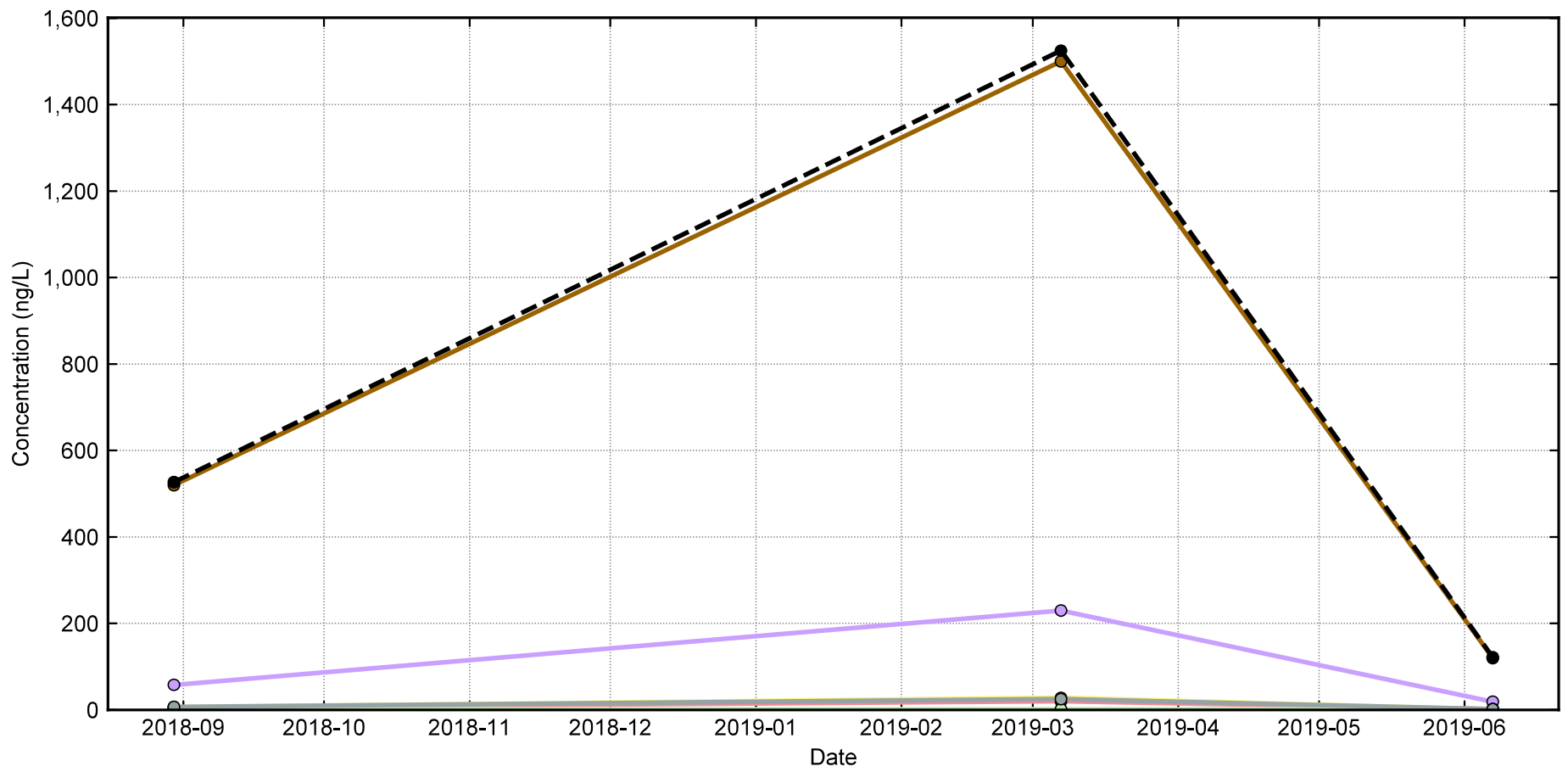
**PW-013**

May 2023 102599-023

**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants

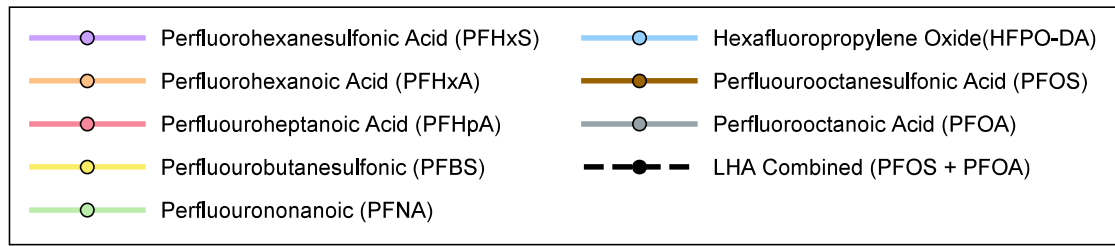
**Figure D.7**

Figure D.7



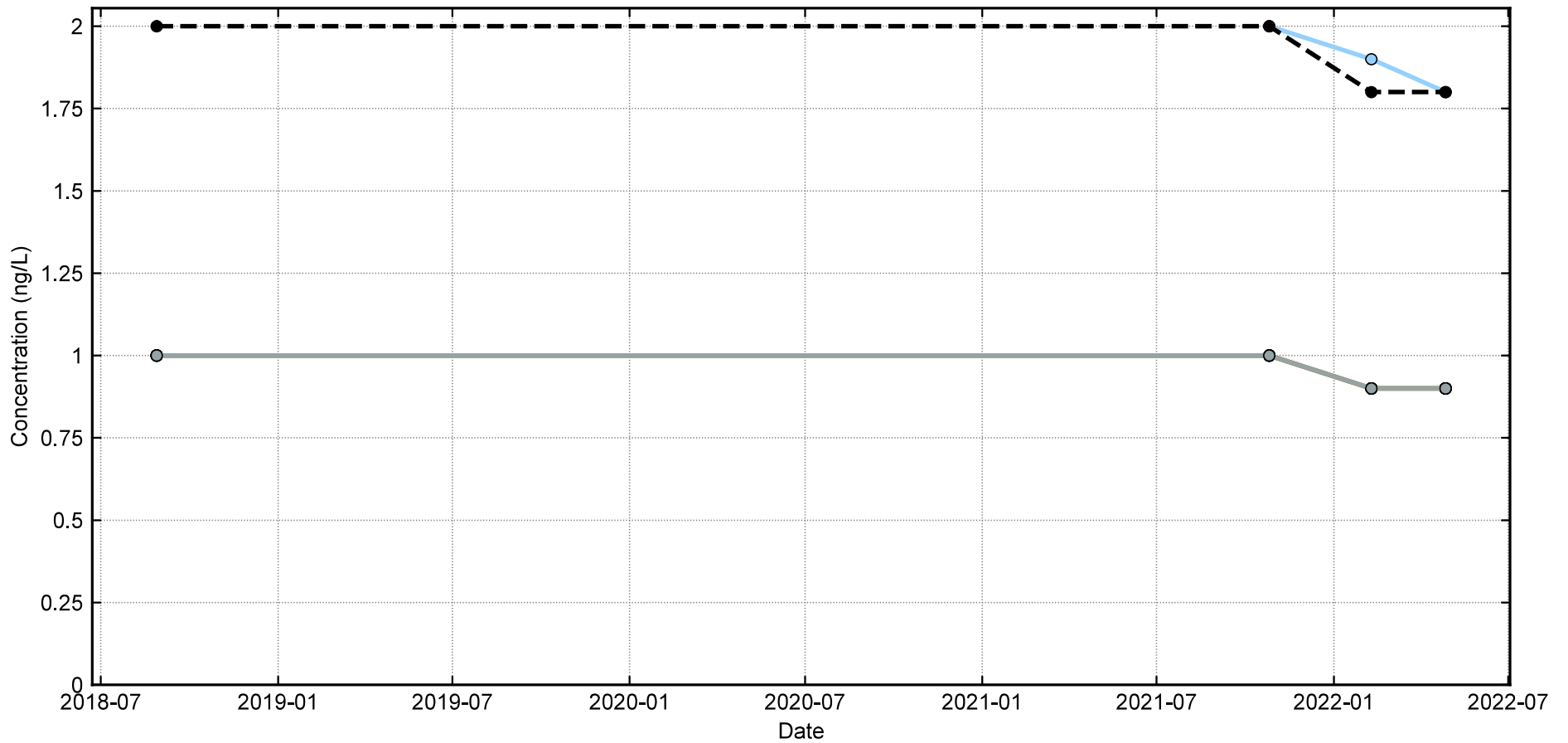
Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



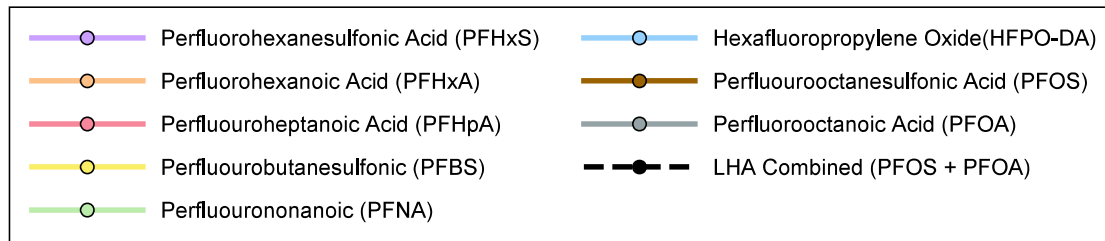
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>PW-022</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.8</b>

Figure D.8



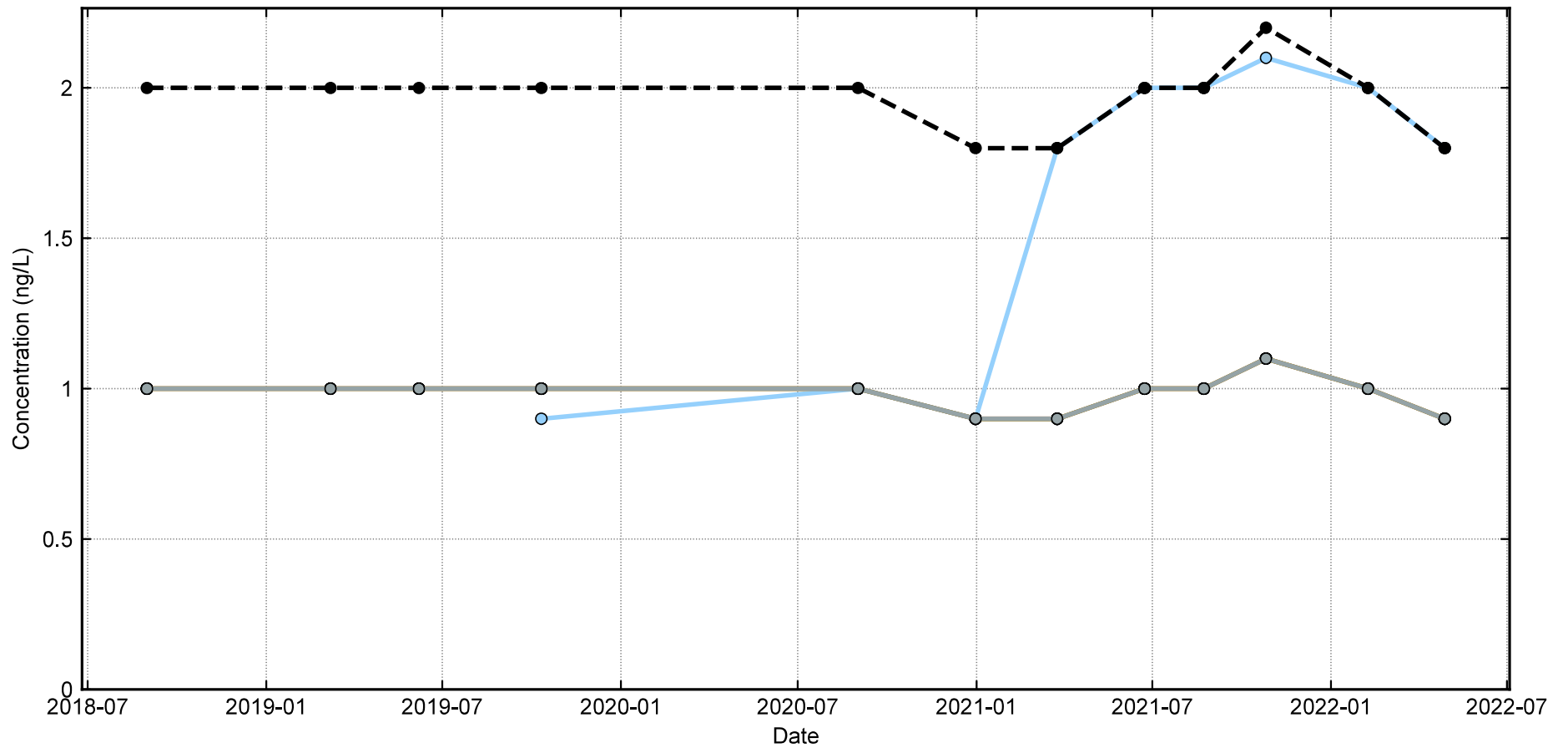
Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



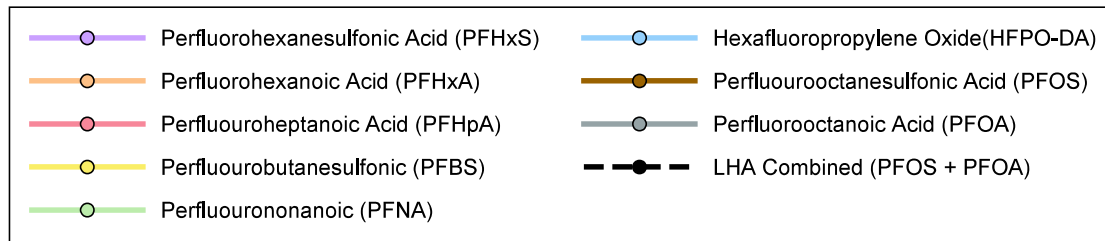
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>PW-036</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.9</b>

Figure D.9



Notes:

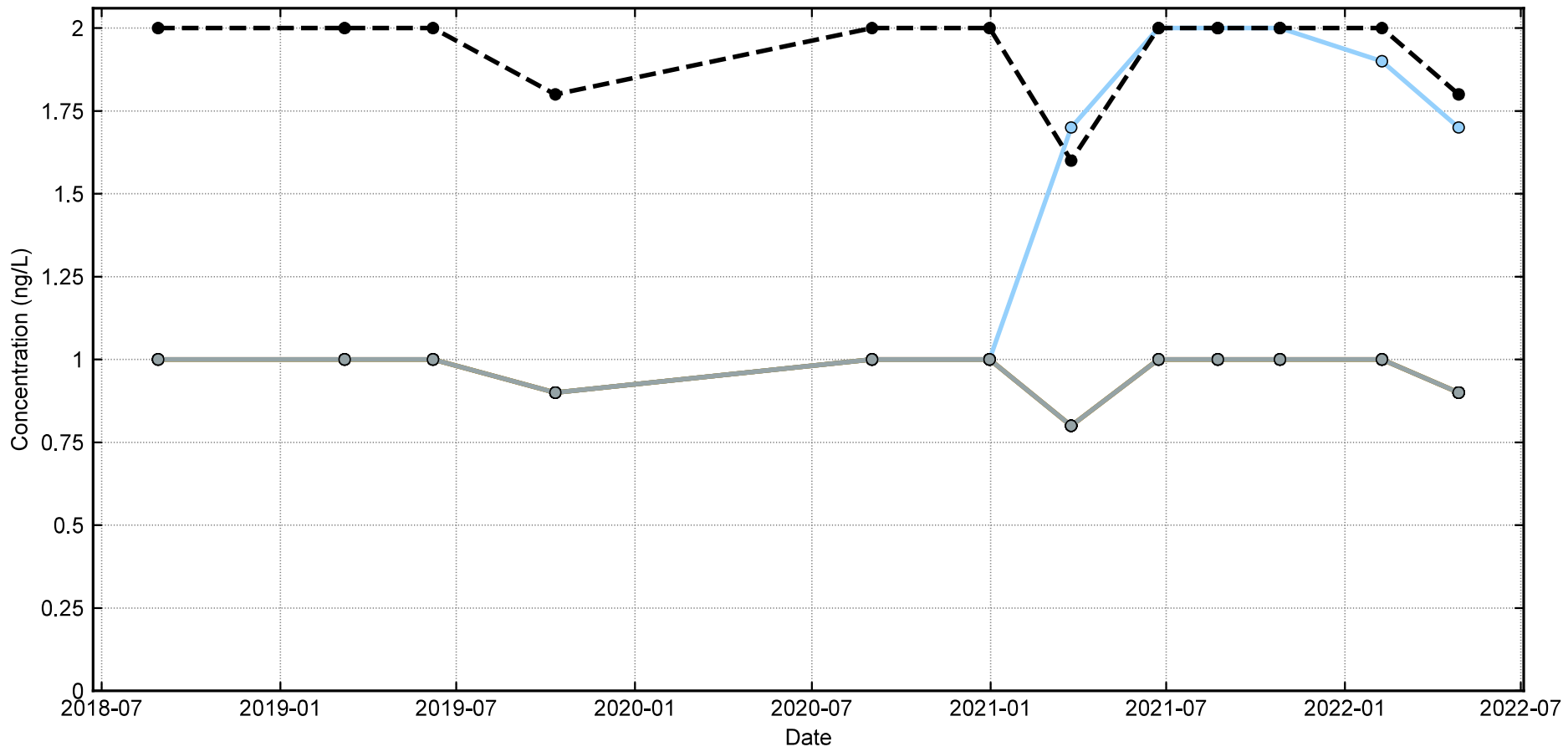
1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
2. Duplicate values were assigned to be the higher of the two results.
3. J-flagged values were assigned to be the estimated value reported.



Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>PW-037</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.10</b>

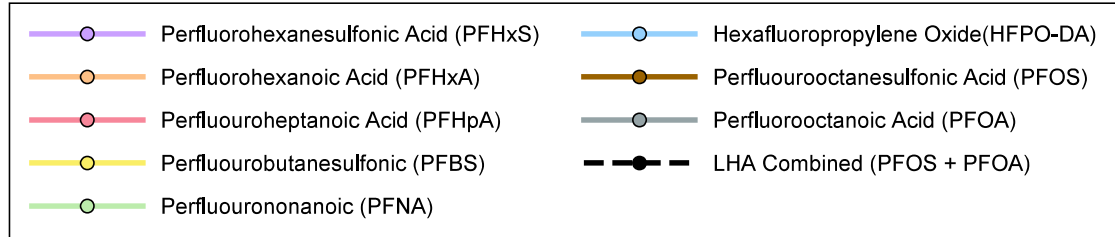
Figure D.10





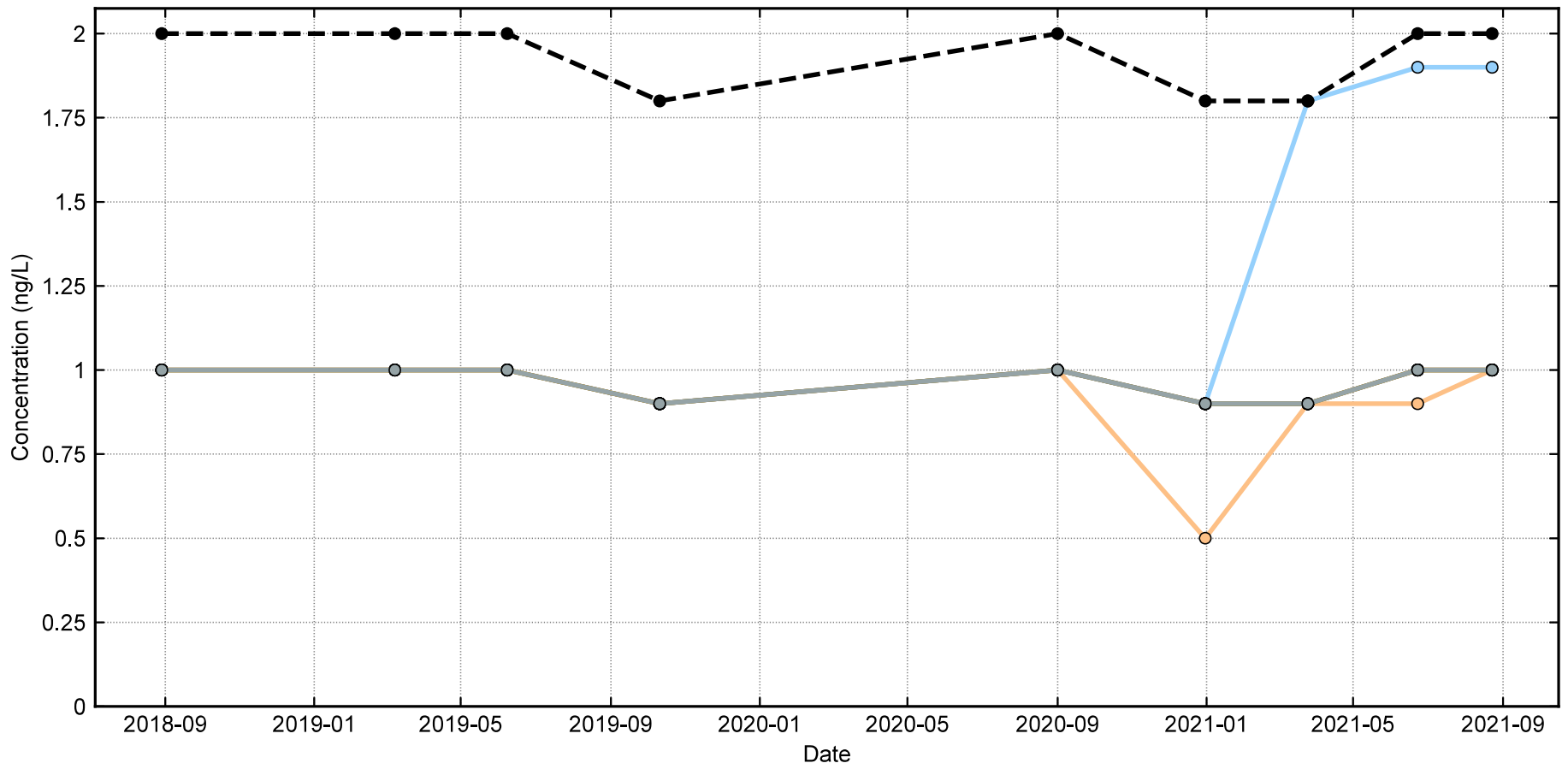
Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



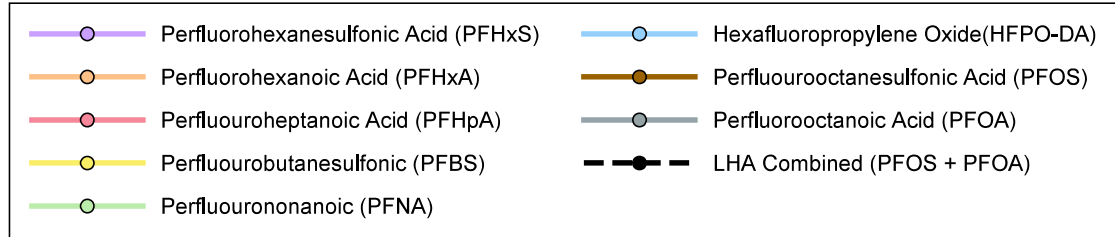
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>PW-038</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.11</b>

Figure D.11



Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



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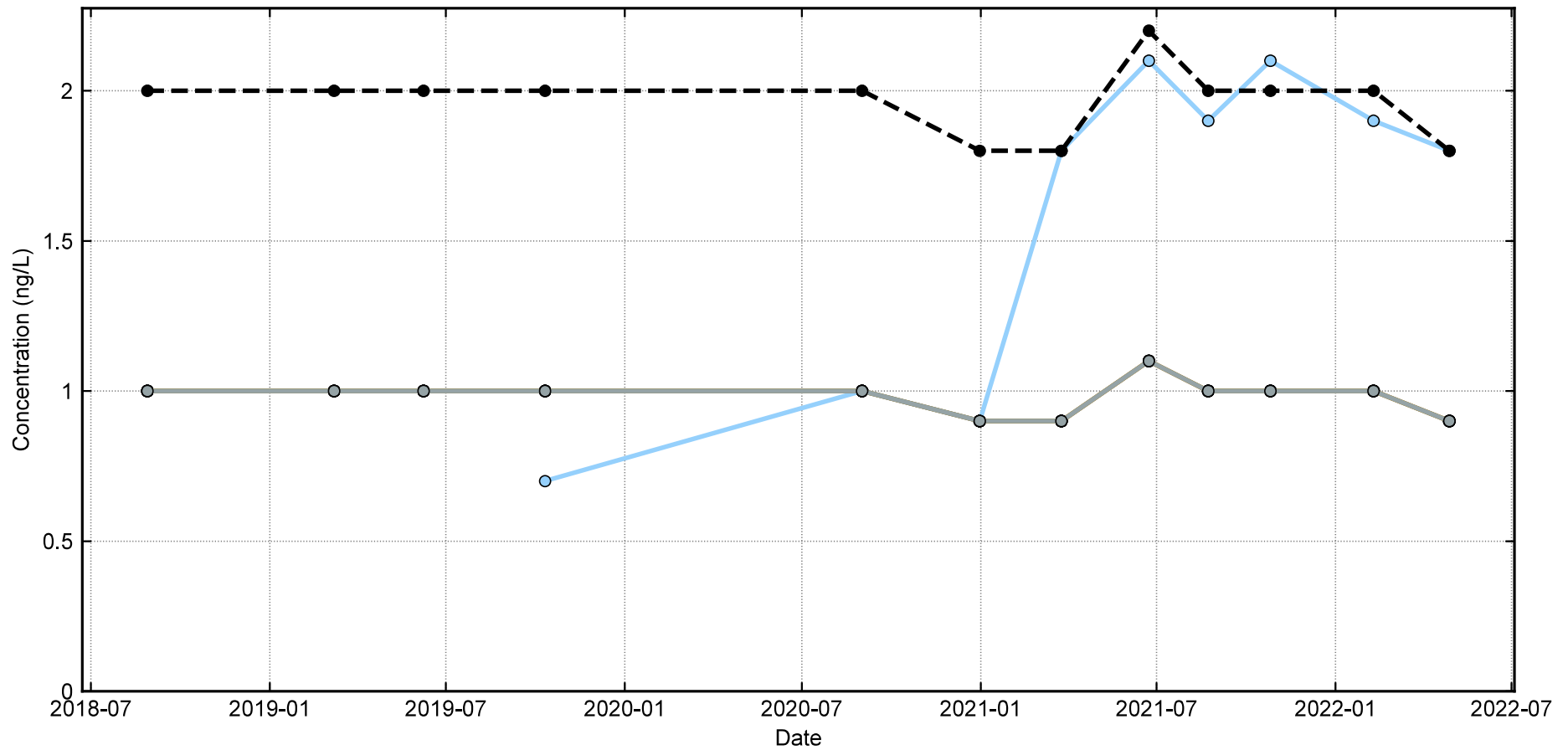
**QUARTERLY LINE GRAPH**

**PW-039**

May 2023 102599-023

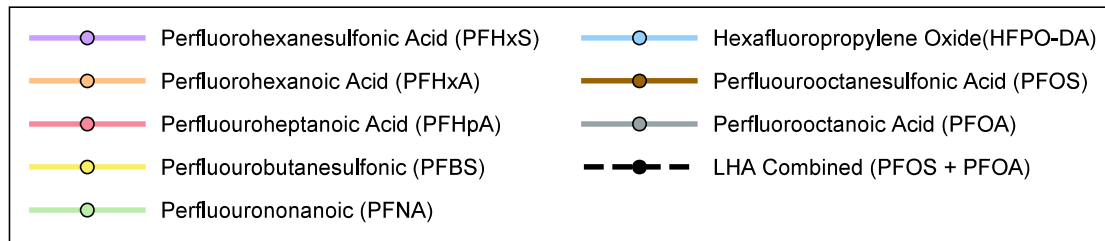
**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants **Figure D.12**

Figure D.12



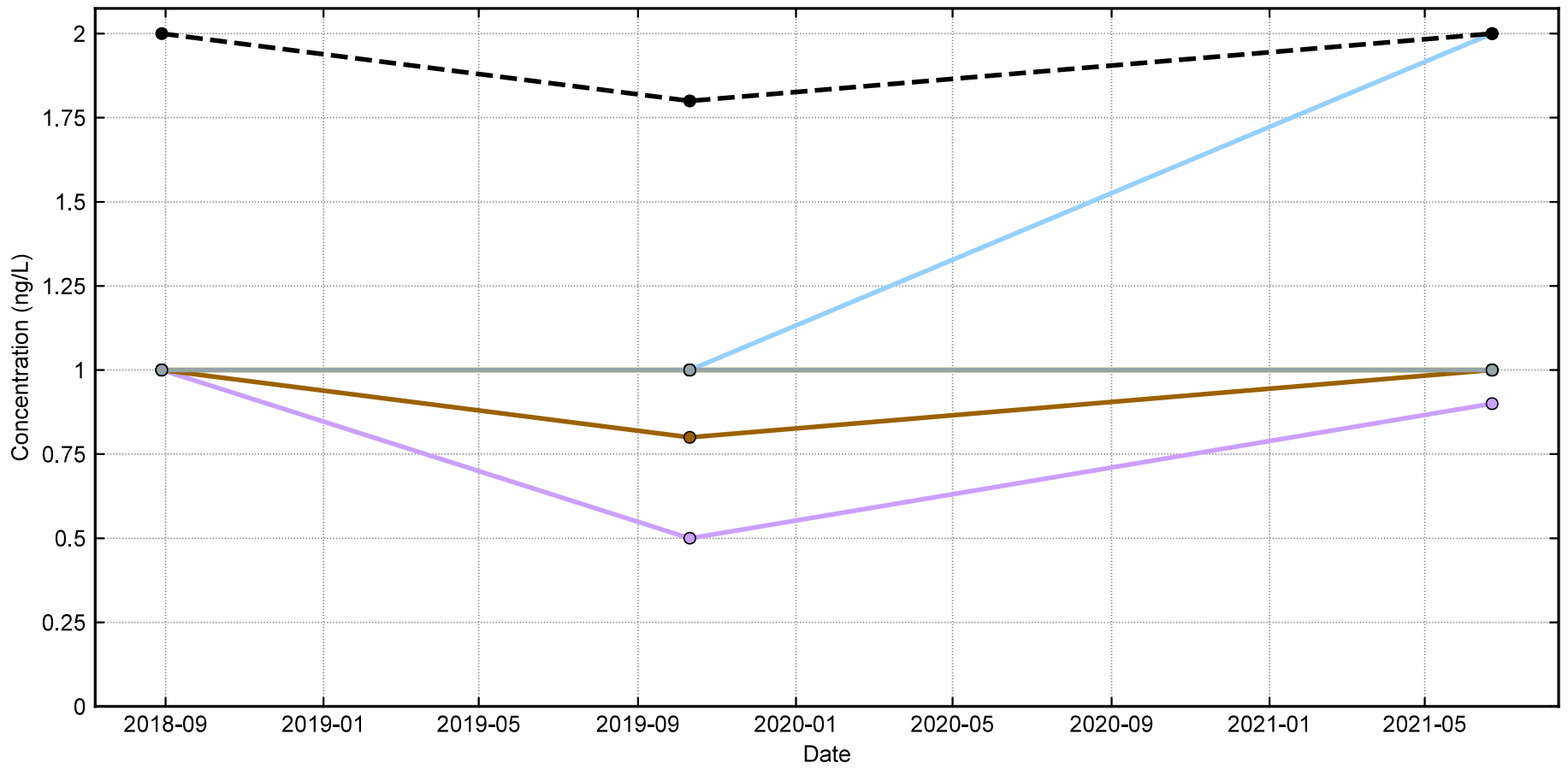
Notes:

1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
2. Duplicate values were assigned to be the higher of the two results.
3. J-flagged values were assigned to be the estimated value reported.



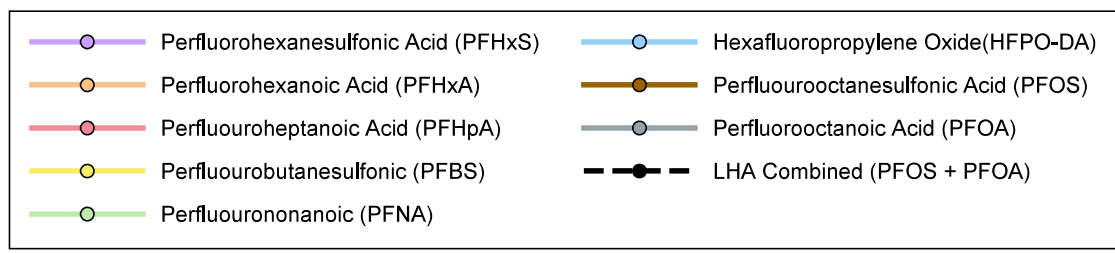
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>PW-040</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.13</b>

Figure D.13



Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



Gustavus Airport Quarterly Groundwater Monitoring Summary  
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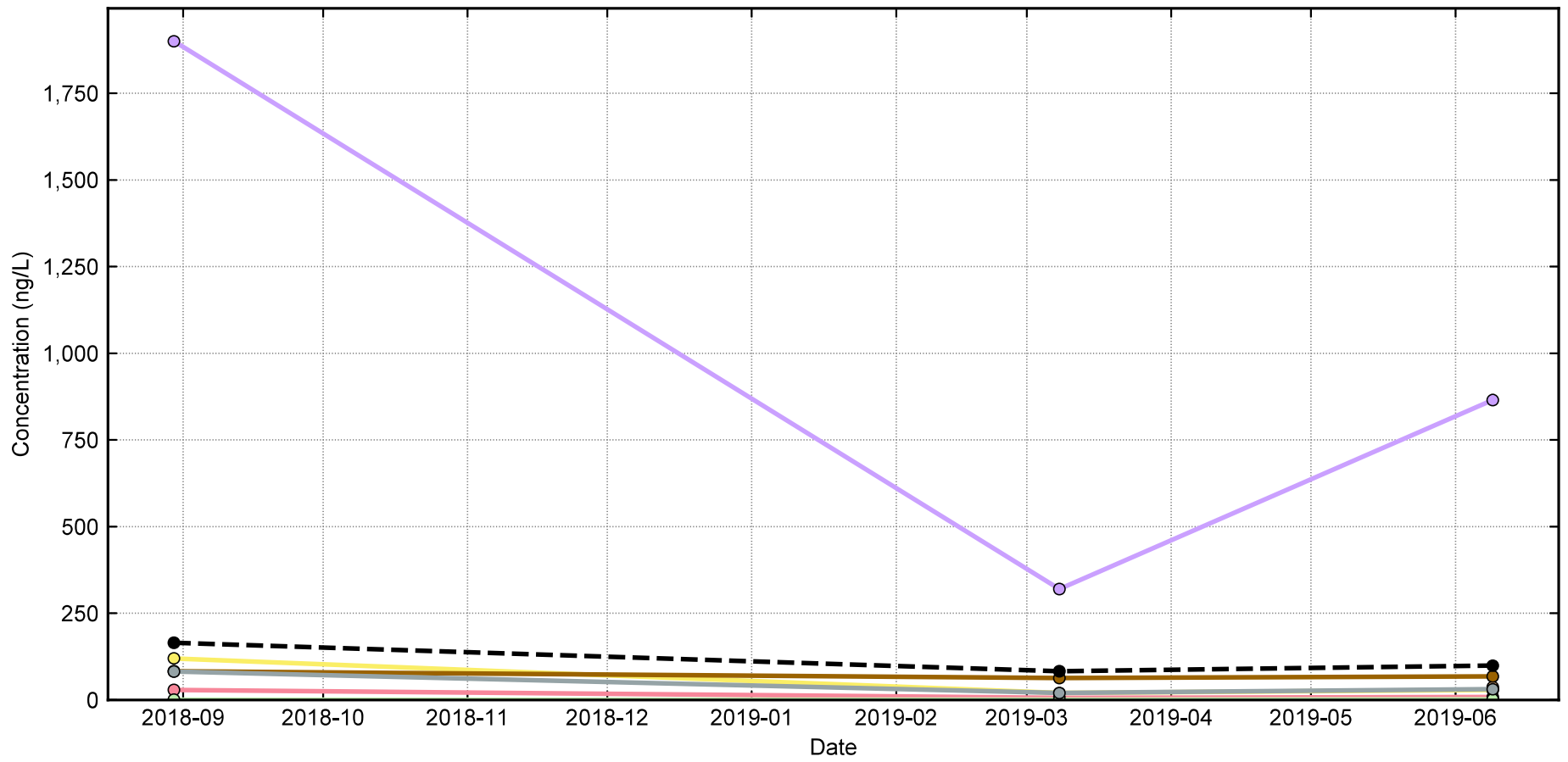
**QUARTERLY LINE GRAPH**

**PW-045**

May 2023 102599-023

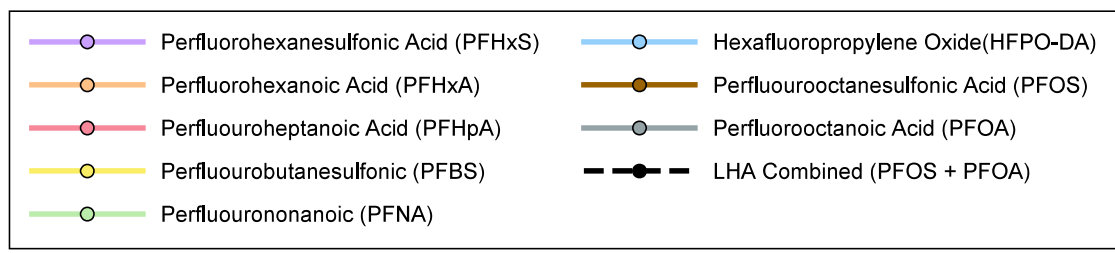
**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants **Figure D.14**

Figure D.14



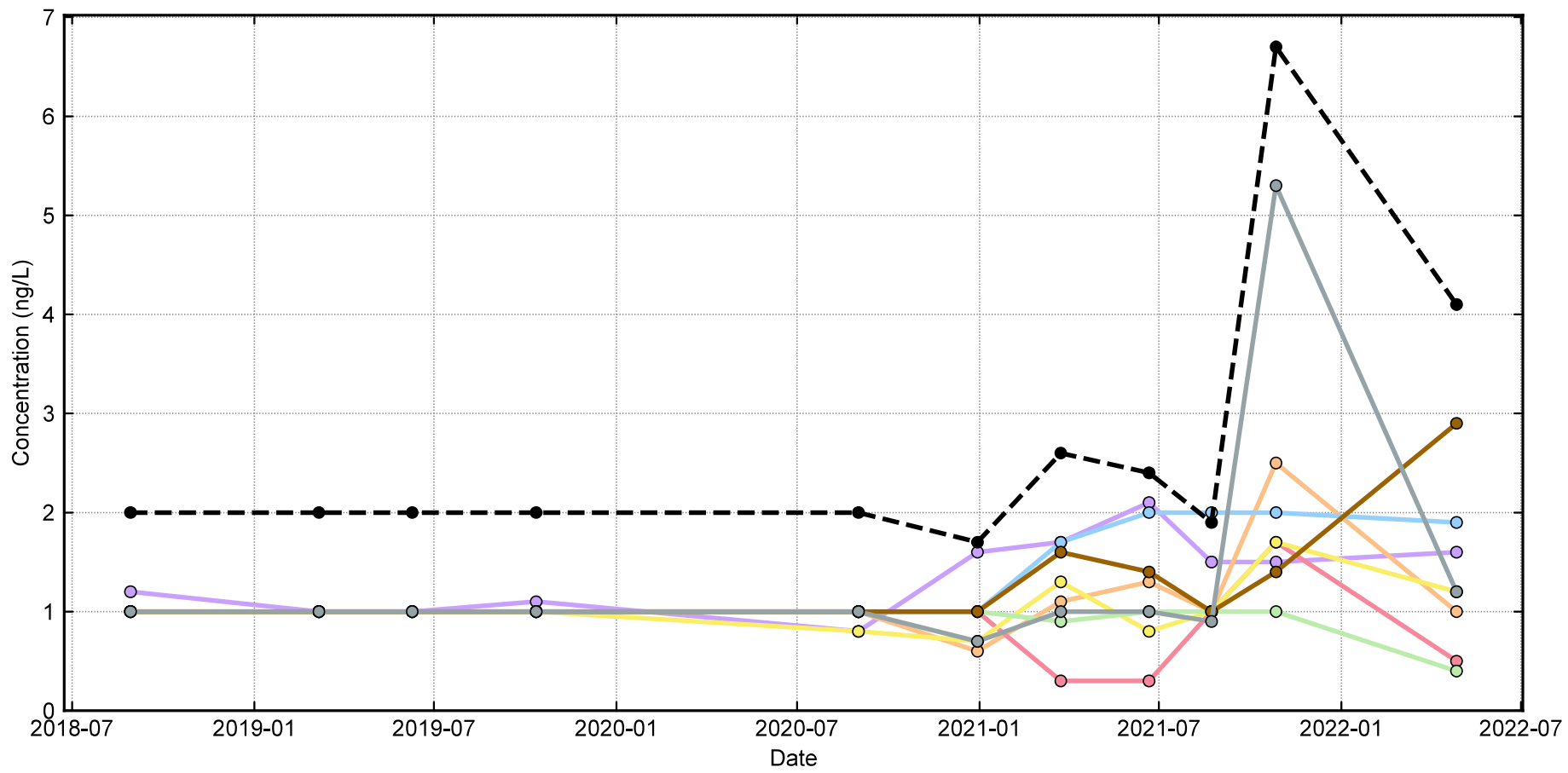
Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



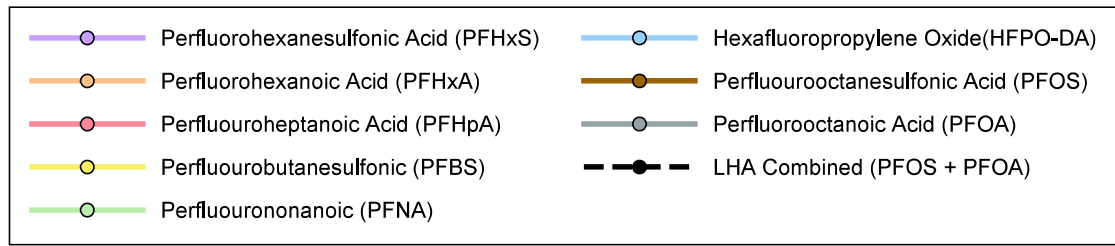
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>PW-046</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.15</b>

Figure D.15



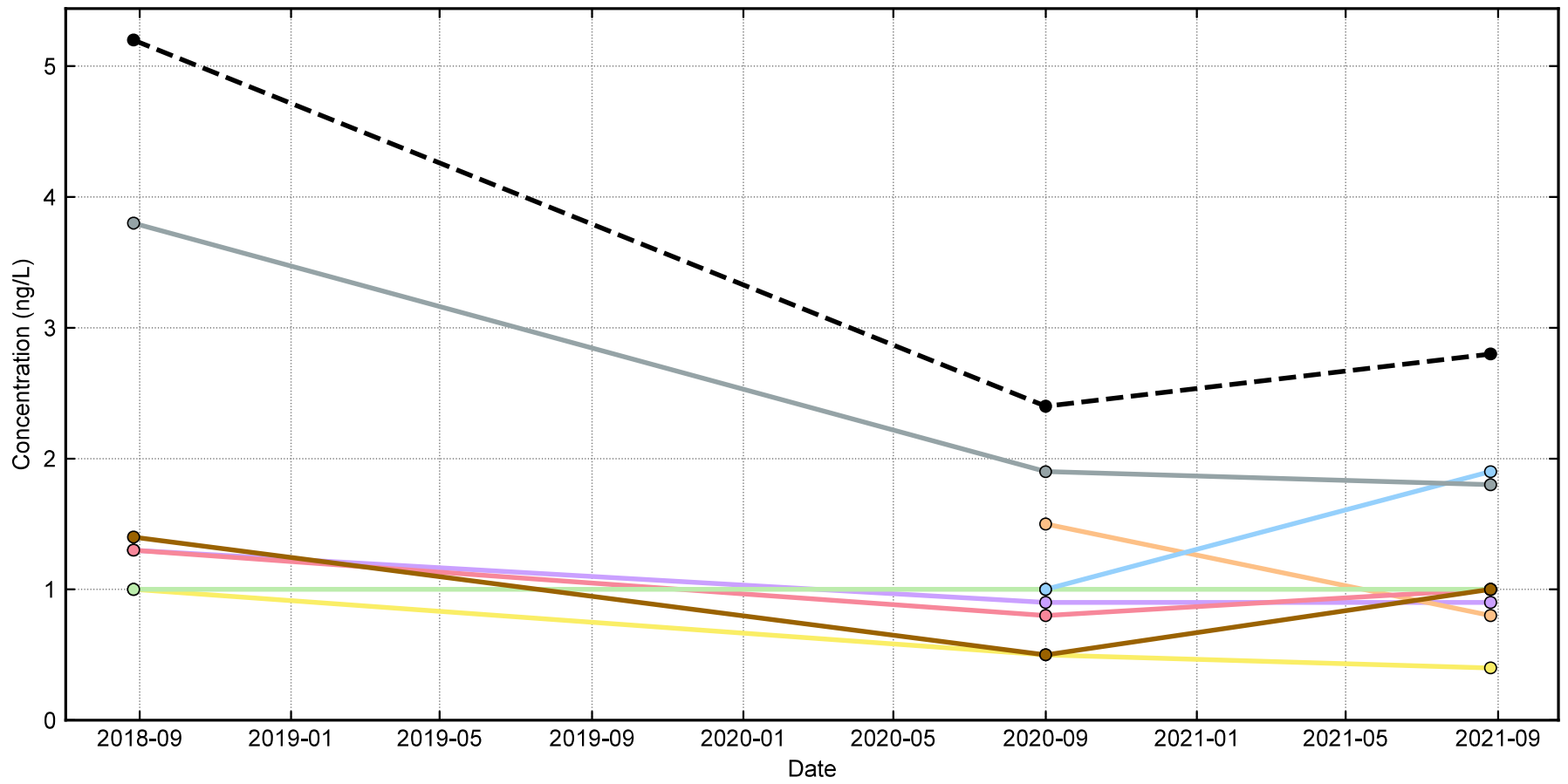
Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



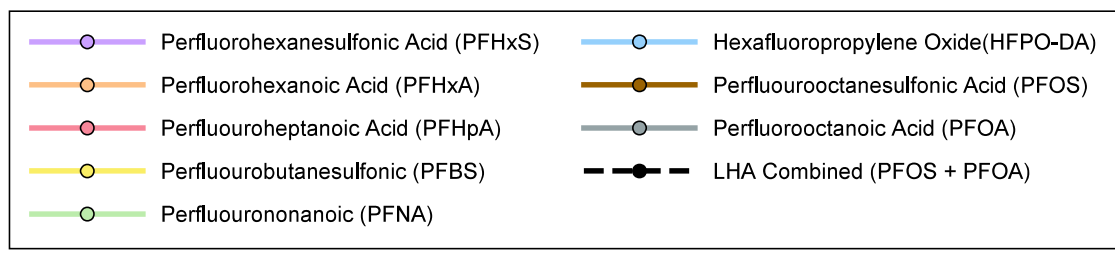
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>PW-059</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.16</b>

Figure D.16



Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



Gustavus Airport Quarterly Groundwater  
Monitoring Summary  
Gustavus, Alaska

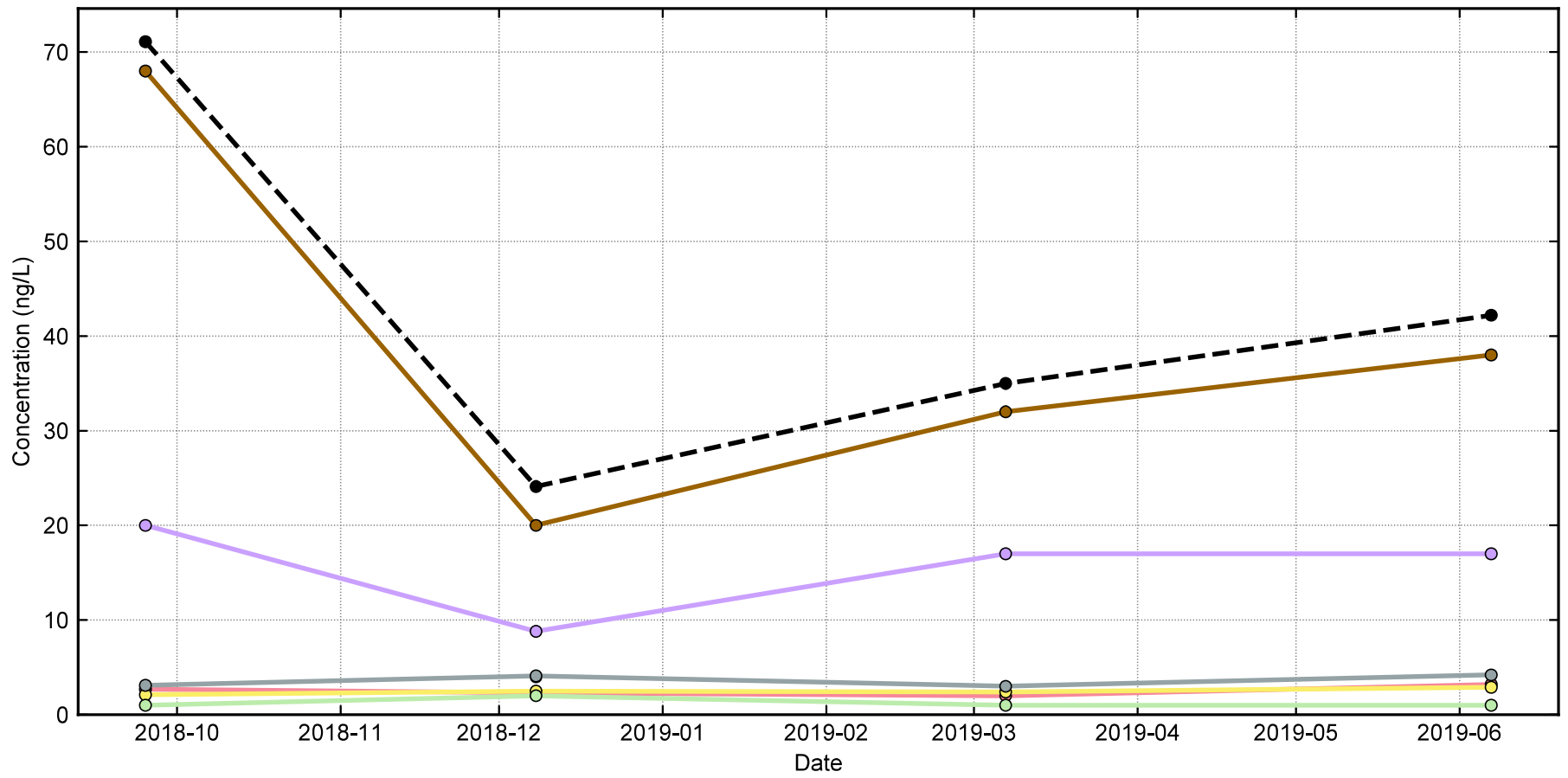
**QUARTERLY LINE GRAPH**

**PW-061**

May 2023 102599-023

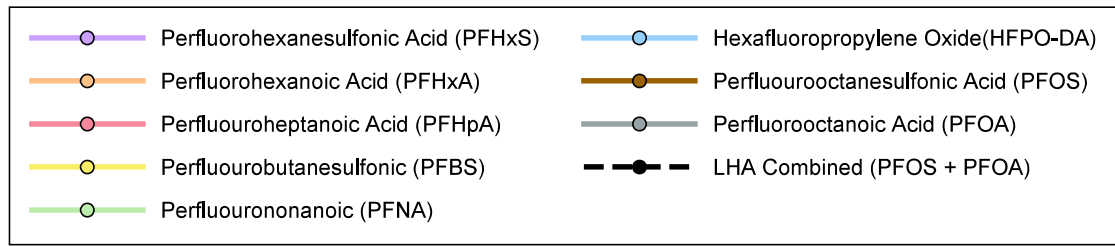
**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants **Figure D.17**

Figure D.17



Notes:

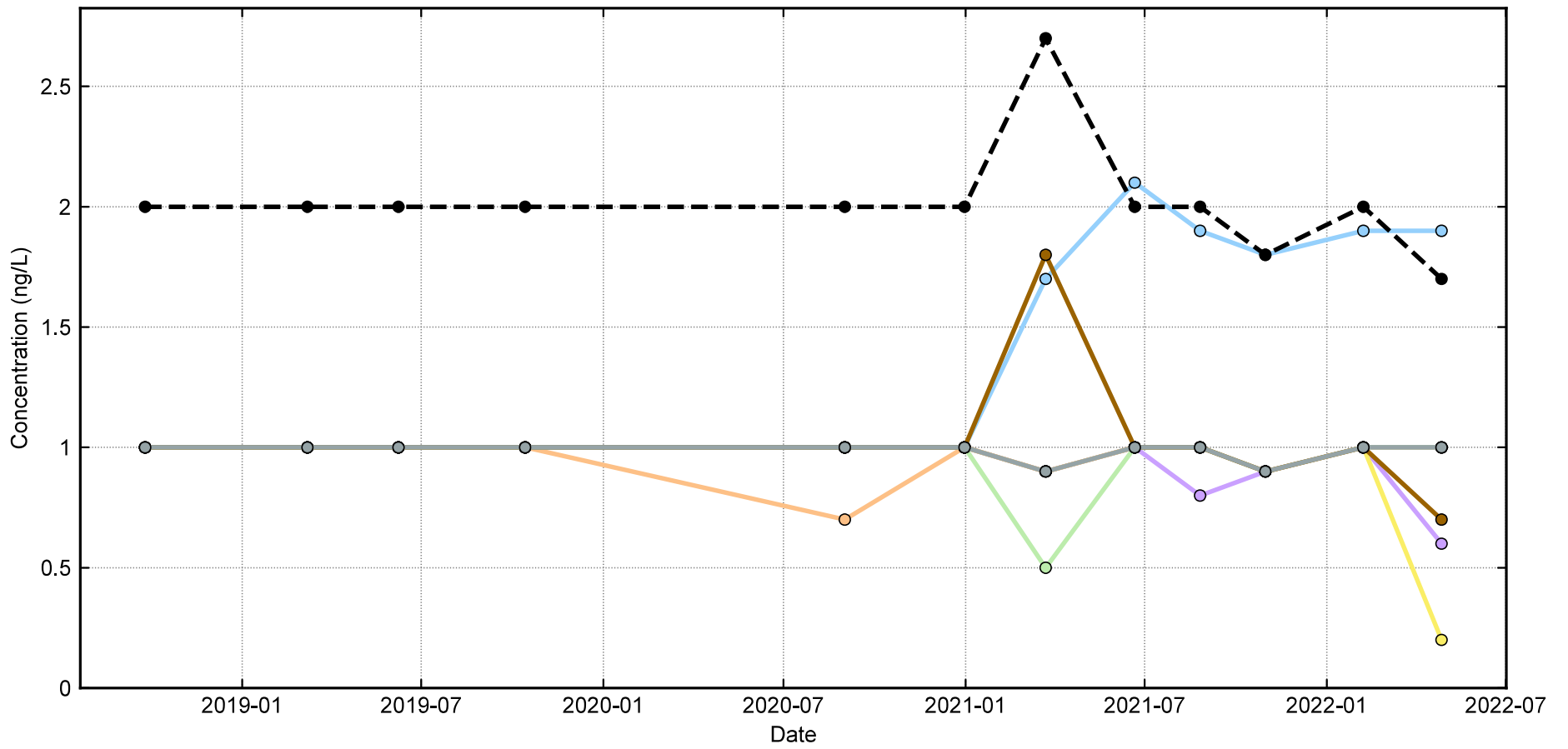
- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



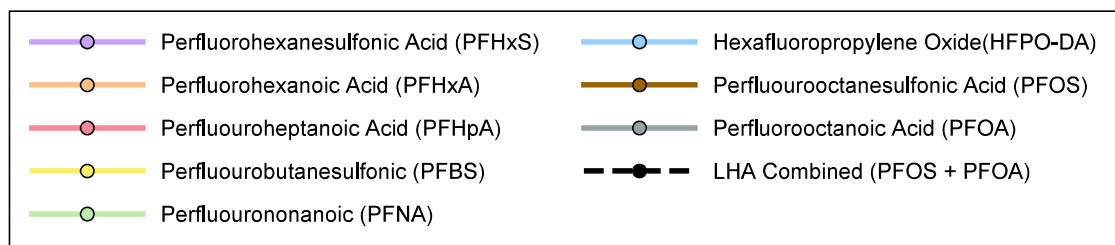
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>PW-202</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.18</b>

Figure D.18

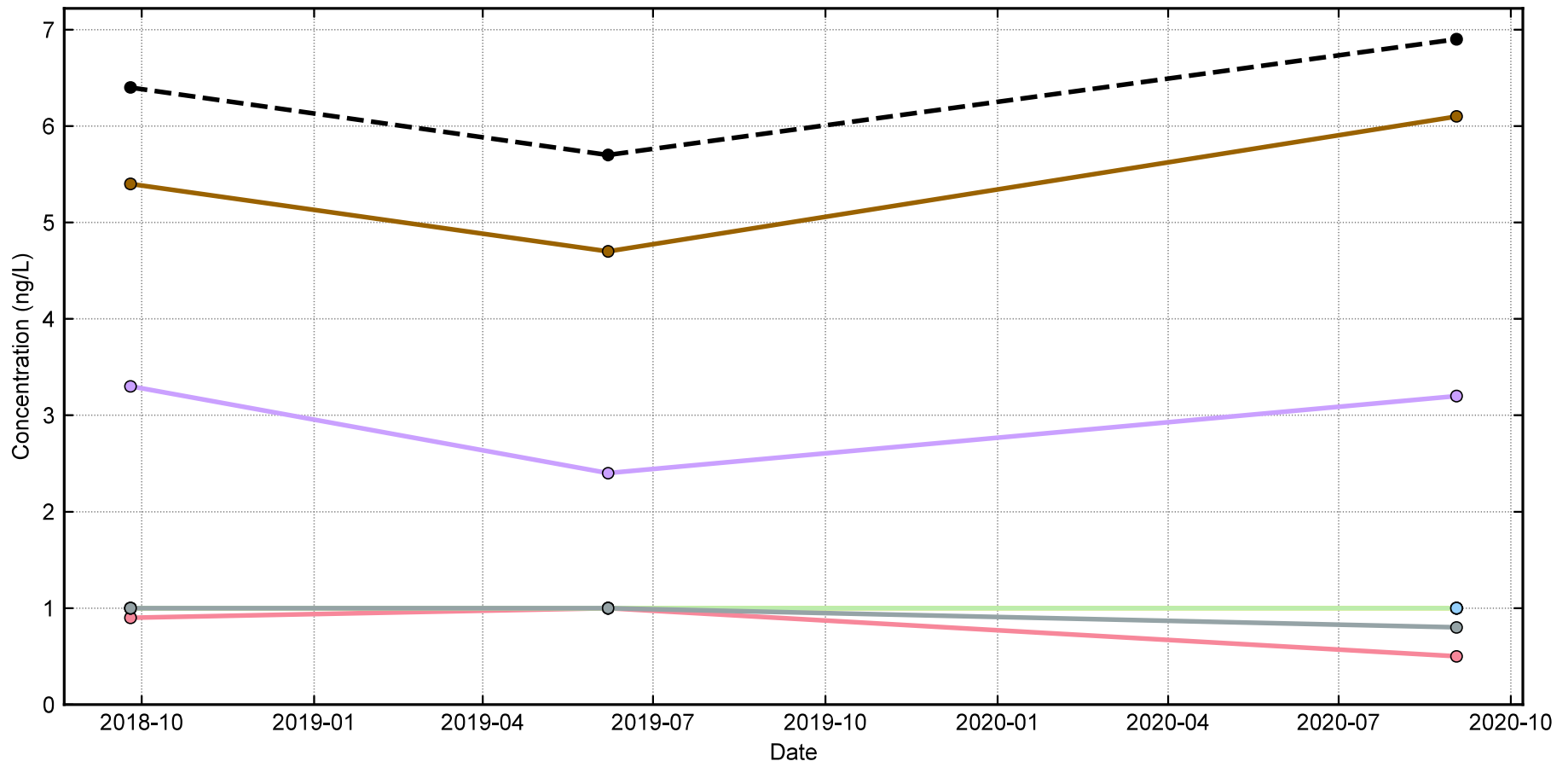




- Notes:
1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
  2. Duplicate values were assigned to be the higher of the two results.
  3. J-flagged values were assigned to be the estimated value reported.

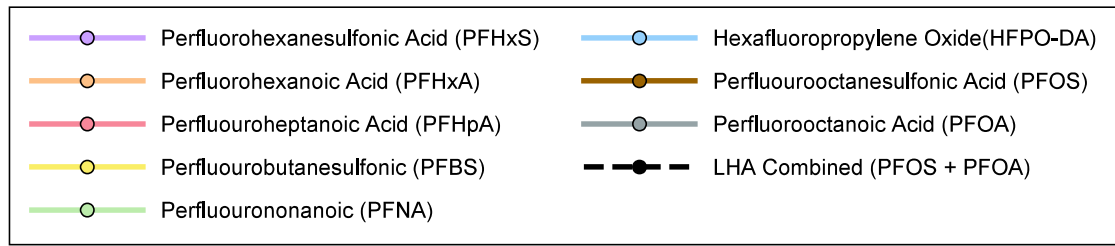


Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>PW-203</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.19</b>



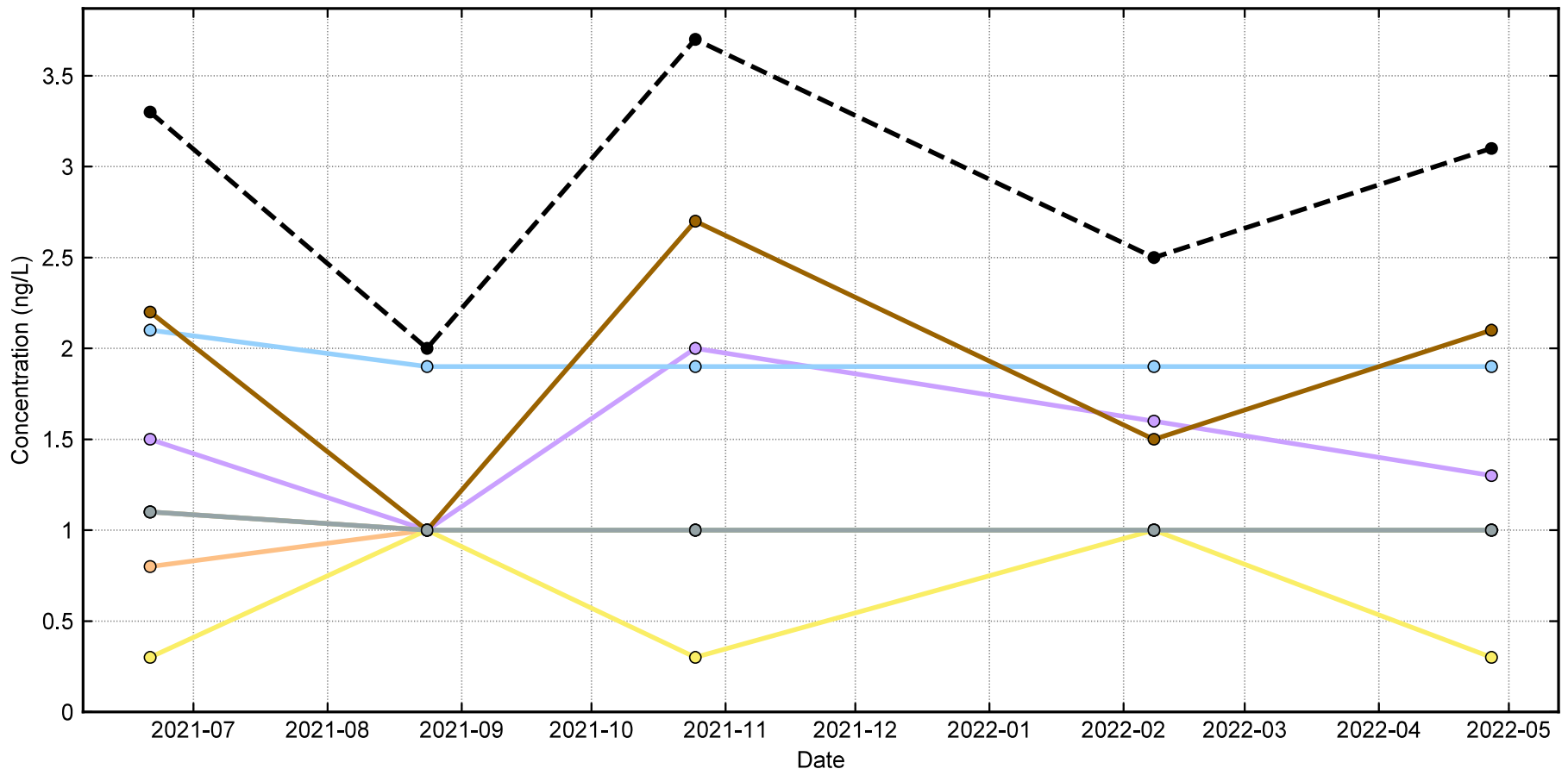
Notes:

1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
2. Duplicate values were assigned to be the higher of the two results.
3. J-flagged values were assigned to be the estimated value reported.



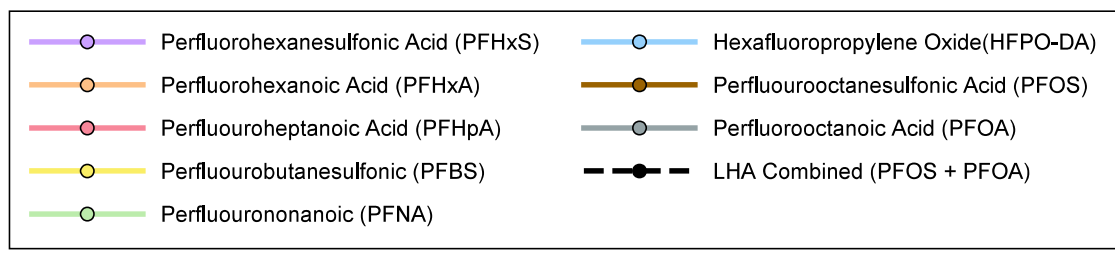
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>PW-204</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.20</b>

Figure D.20



Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



Gustavus Airport Quarterly Groundwater Monitoring Summary  
Gustavus, Alaska

**QUARTERLY LINE GRAPH**

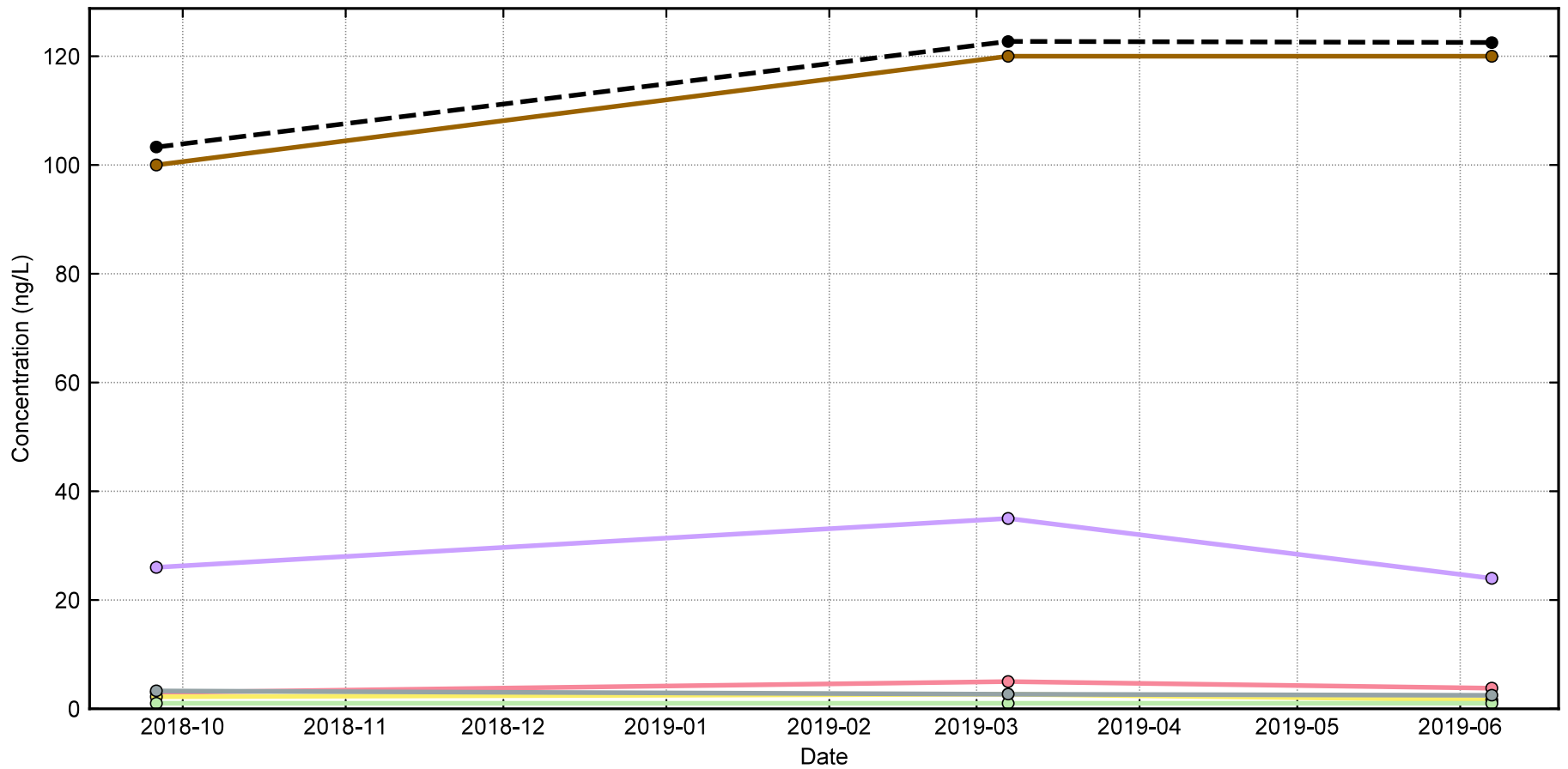
**PW-205.1**

May 2023 102599-023

**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants

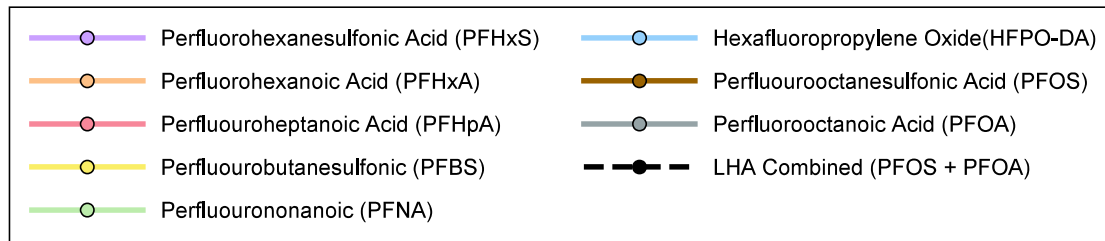
**Figure D.21**

Figure D.21



Notes:

1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
2. Duplicate values were assigned to be the higher of the two results.
3. J-flagged values were assigned to be the estimated value reported.



Gustavus Airport Quarterly Groundwater Monitoring Summary  
Gustavus, Alaska

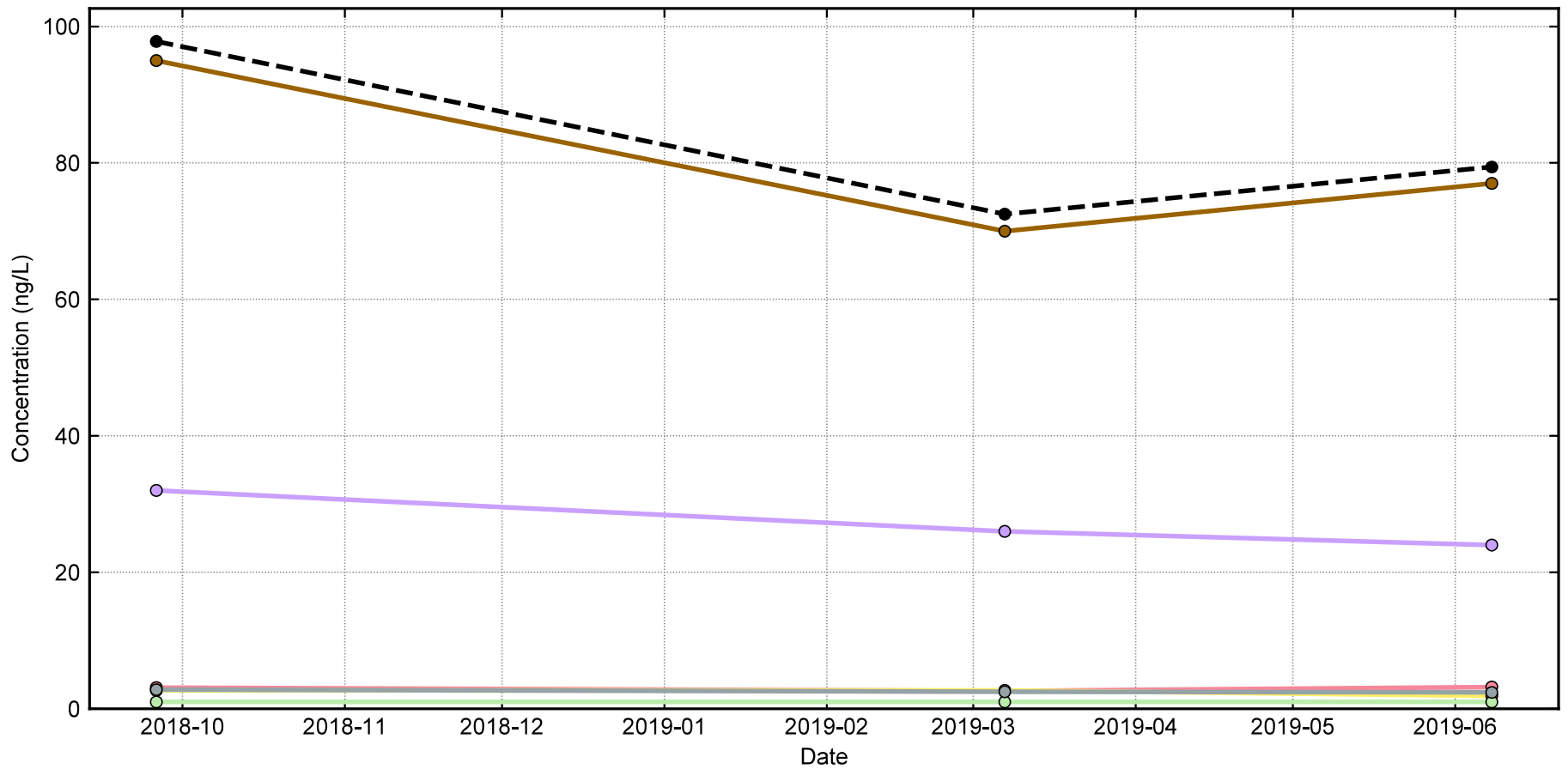
**QUARTERLY LINE GRAPH**

**PW-209**

May 2023 102599-023

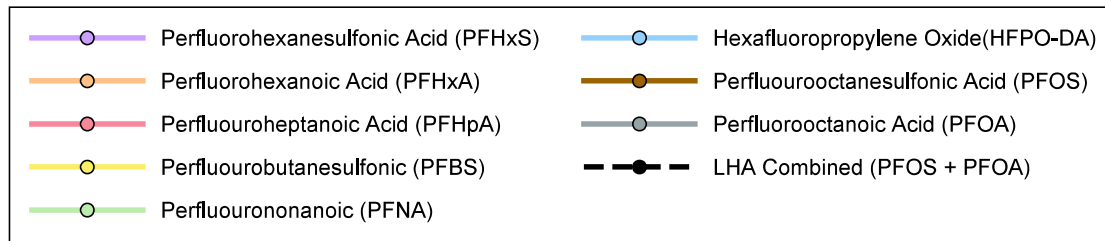
**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants **Figure D.22**

Figure D.22



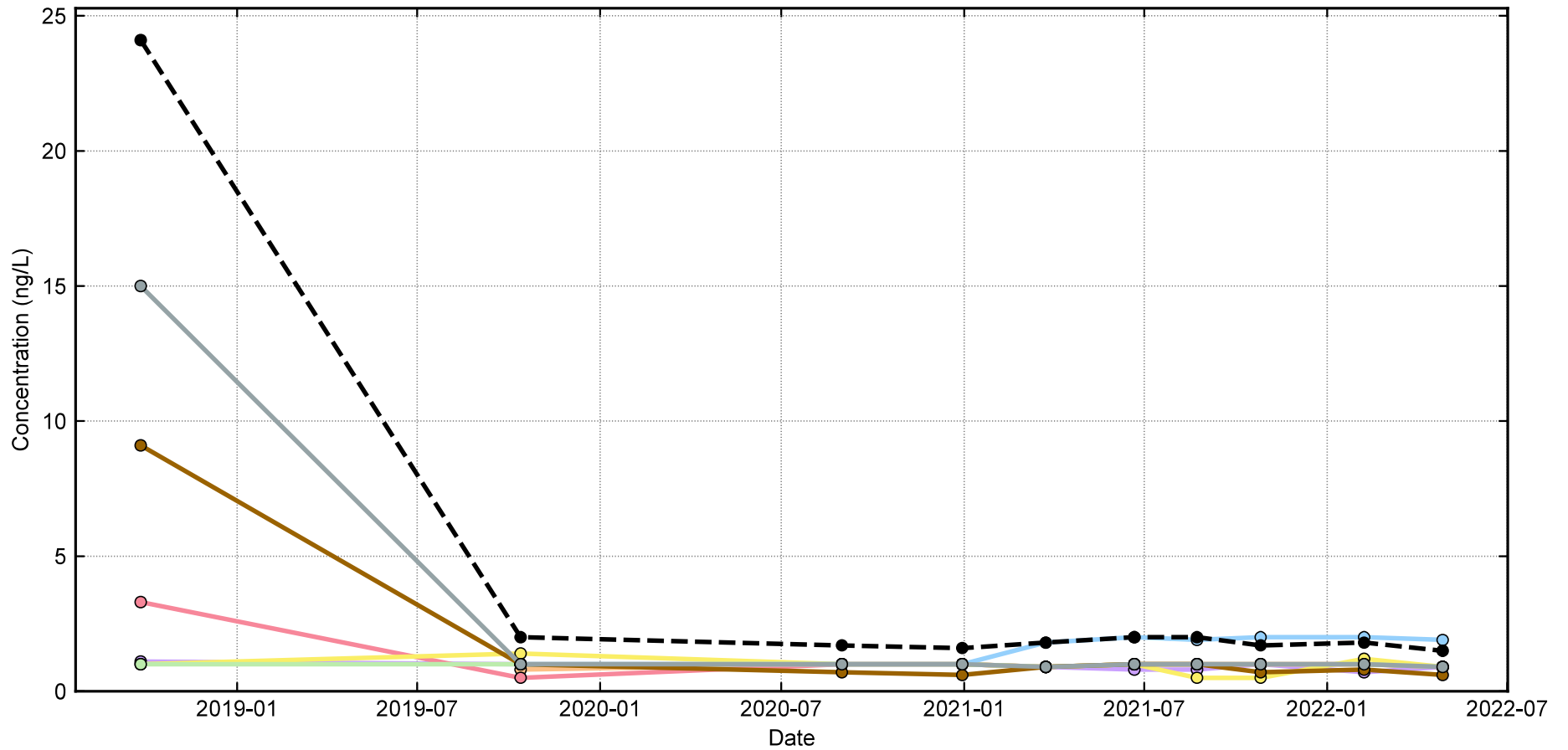
Notes:

1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
2. Duplicate values were assigned to be the higher of the two results.
3. J-flagged values were assigned to be the estimated value reported.



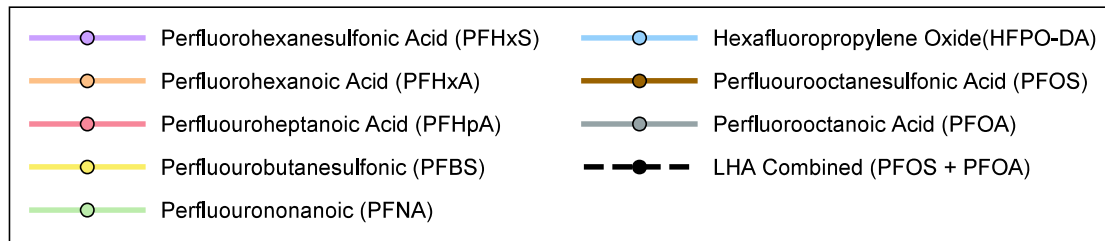
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>PW-210</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.23</b>

Figure D.23



Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



Gustavus Airport Quarterly Groundwater  
Monitoring Summary  
Gustavus, Alaska

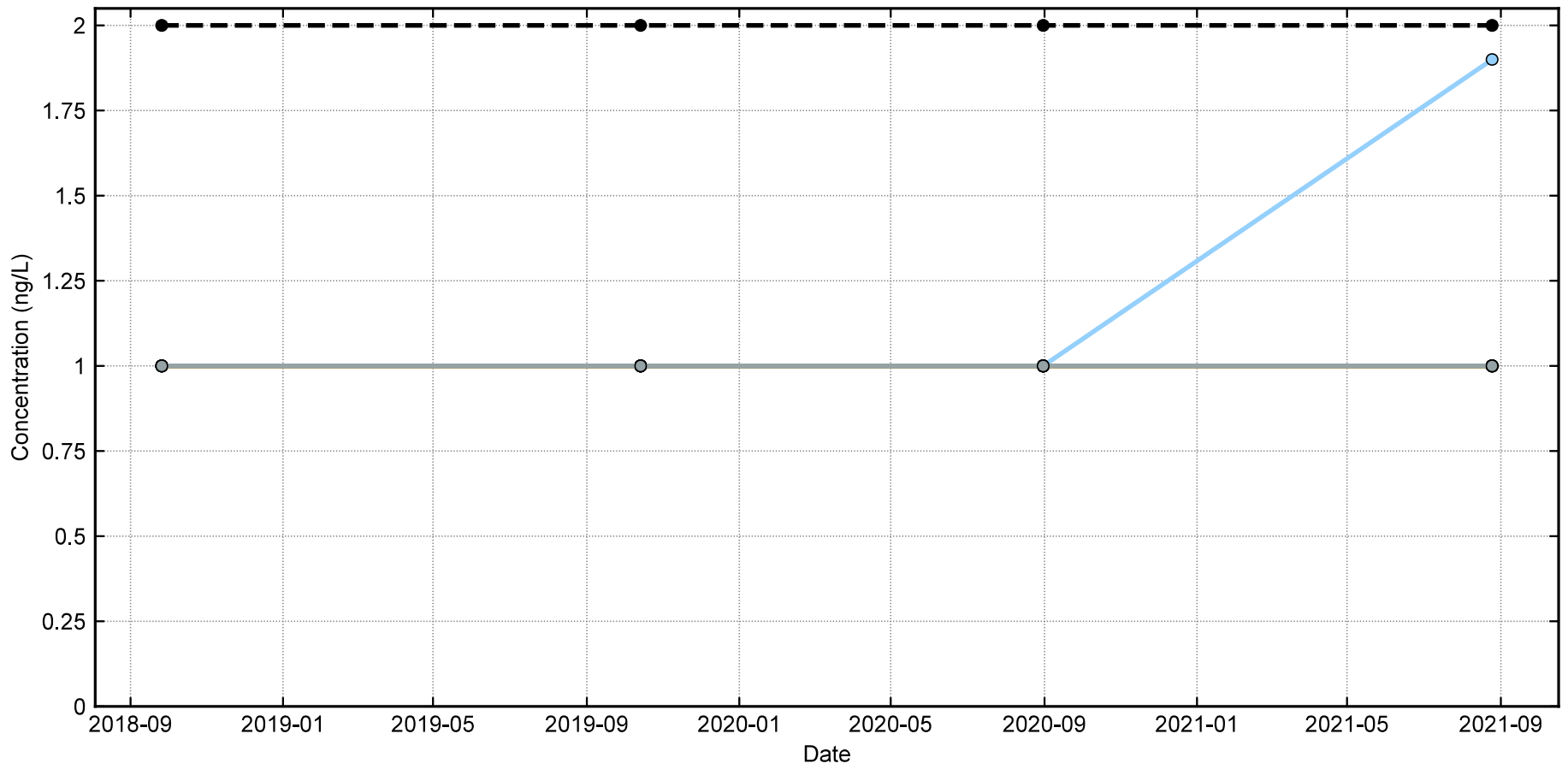
**QUARTERLY LINE GRAPH**

**PW-211**

May 2023 102599-023

**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants **Figure D.24**

Figure D.24



Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.

Perfluorohexanesulfonic Acid (PFHxS)	Hexafluoropropylene Oxide (HFPO-DA)
Perfluorohexanoic Acid (PFHxA)	Perfluorooctanesulfonic Acid (PFOS)
Perfluoroheptanoic Acid (PFHpA)	Perfluorooctanoic Acid (PFOA)
Perfluorobutanesulfonic (PFBS)	LHA Combined (PFOS + PFOA)
Perfluorononanoic (PFNA)	

Gustavus Airport Quarterly Groundwater Monitoring Summary  
Gustavus, Alaska

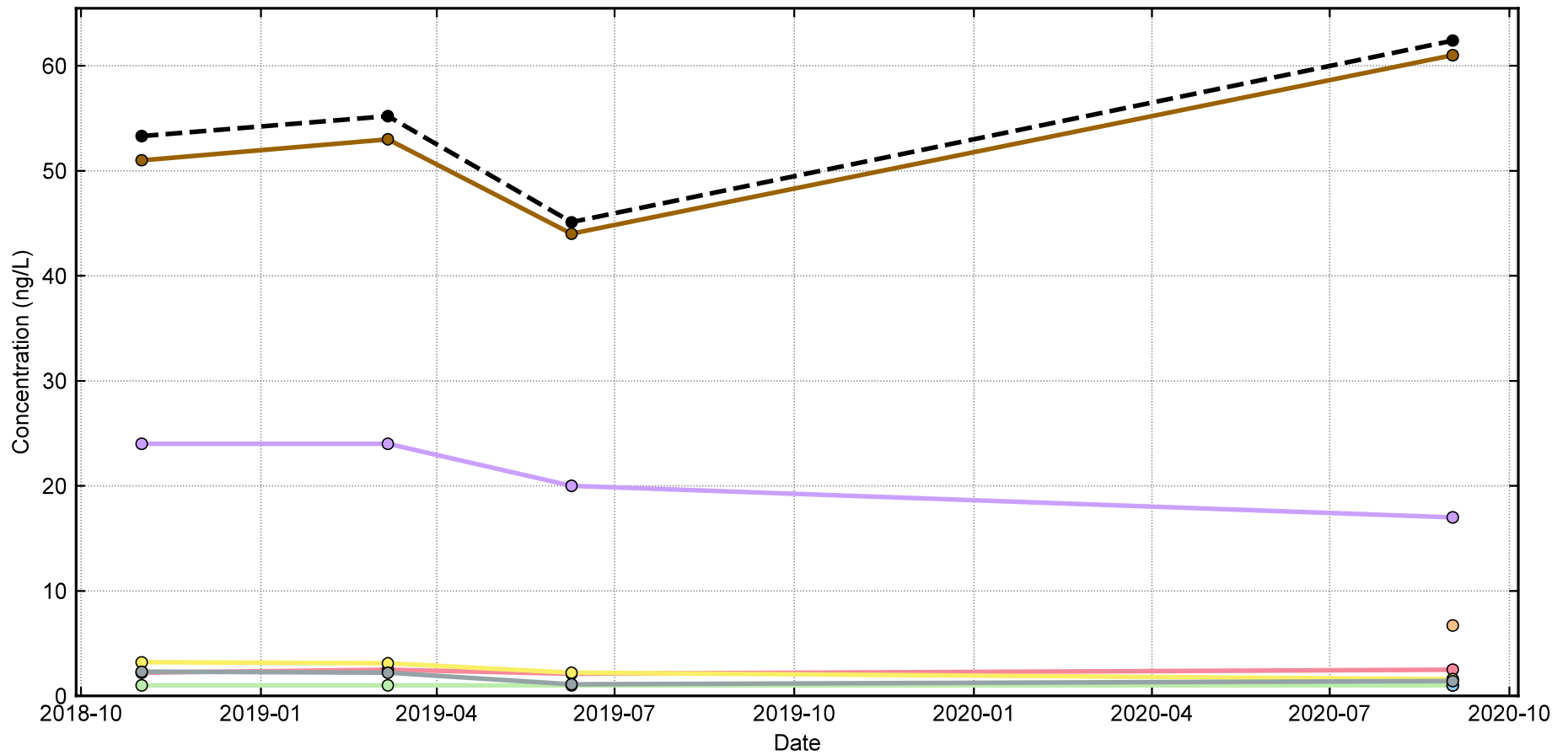
**QUARTERLY LINE GRAPH**

**PW-212**

May 2023 102599-023

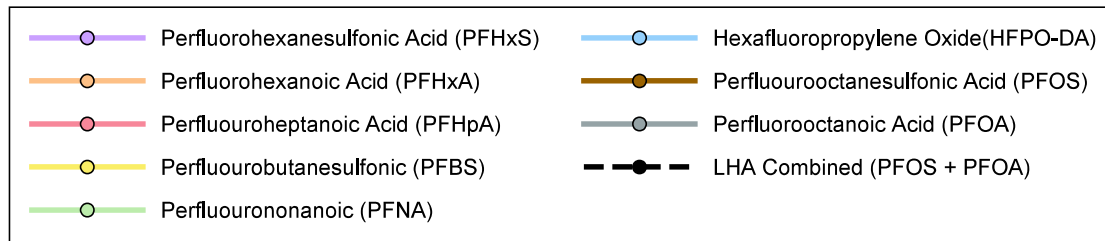
**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants **Figure D.25**

Figure D.25



Notes:

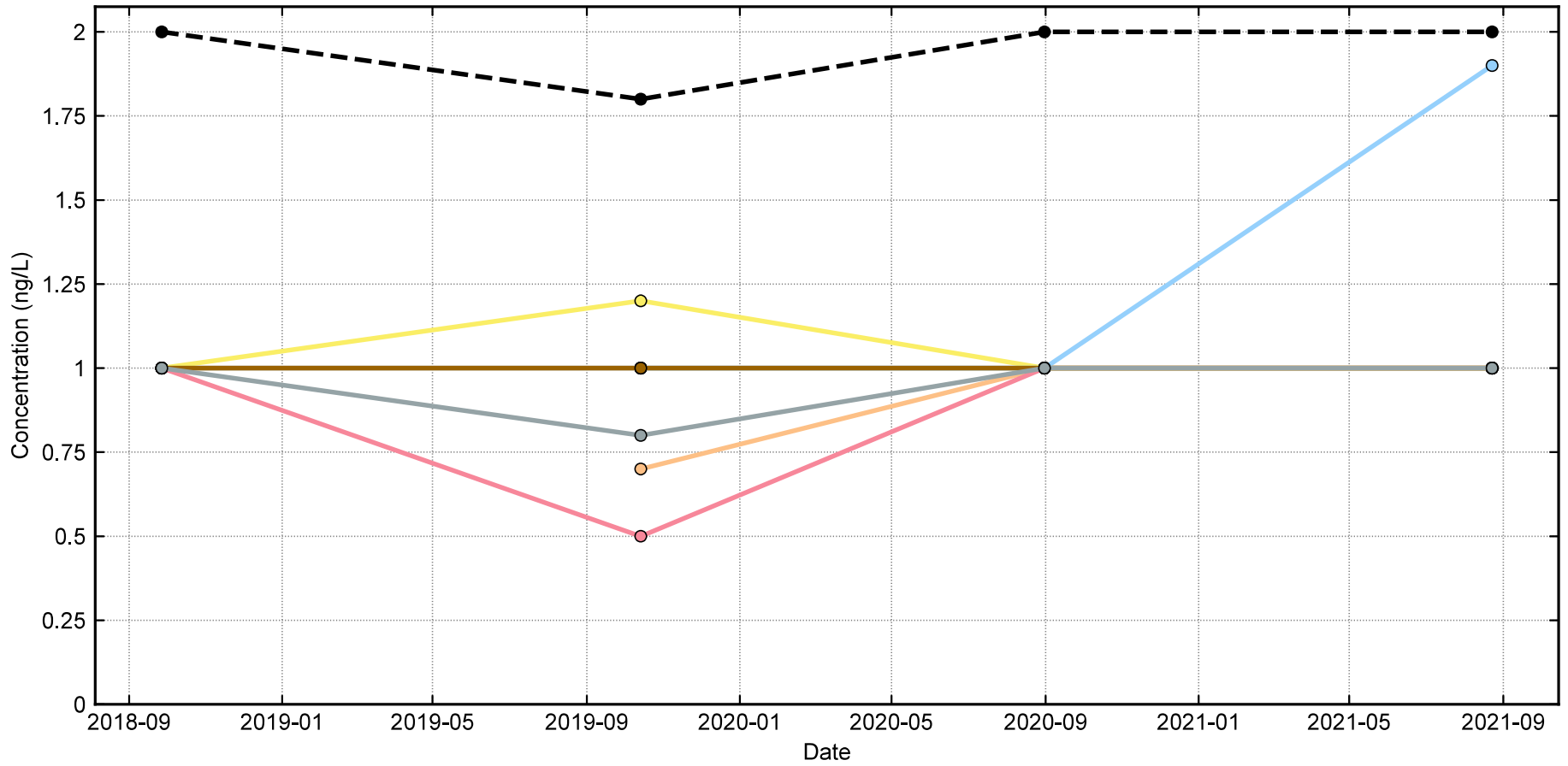
1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
2. Duplicate values were assigned to be the higher of the two results.
3. J-flagged values were assigned to be the estimated value reported.



Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>PW-213</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.26</b>

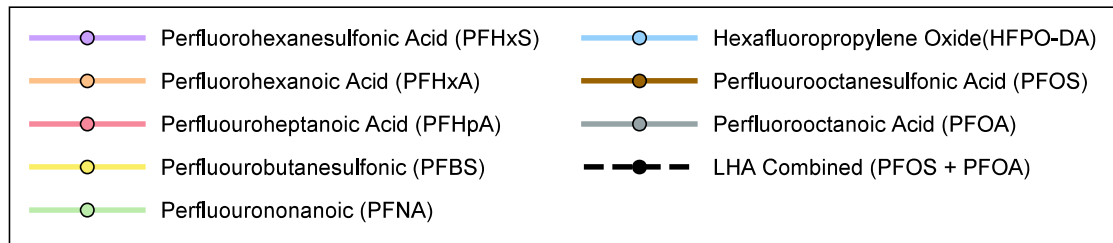
Figure D.26





Notes:

1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
2. Duplicate values were assigned to be the higher of the two results.
3. J-flagged values were assigned to be the estimated value reported.



Gustavus Airport Quarterly Groundwater  
Monitoring Summary  
Gustavus, Alaska

**QUARTERLY LINE GRAPH**

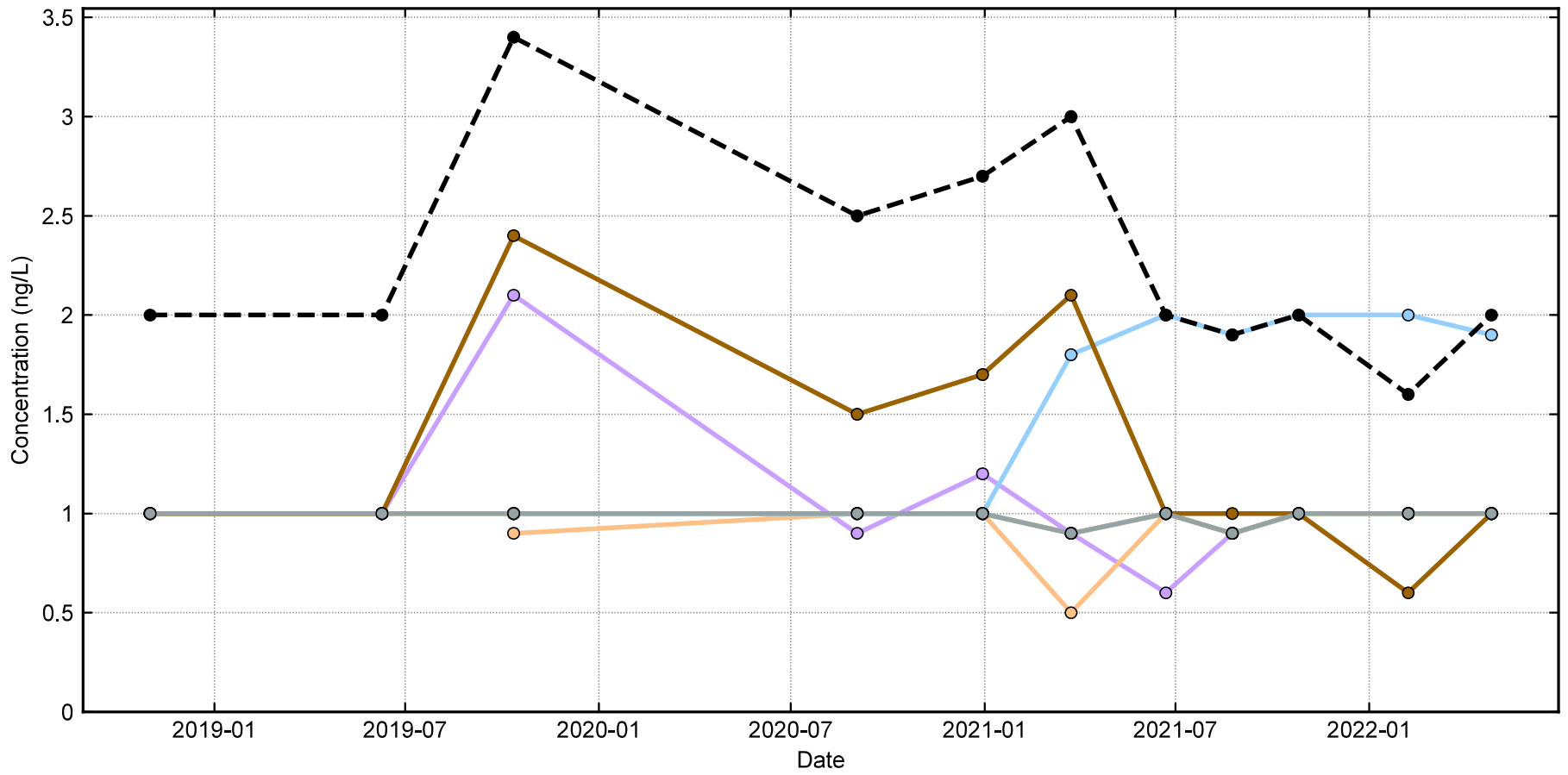
**PW-219**

May 2023

102599-023

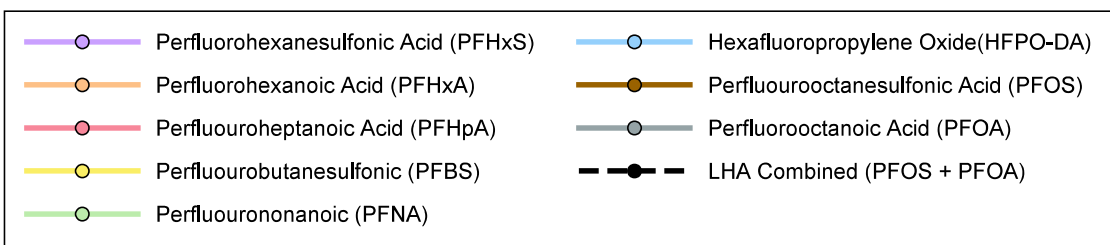
**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants

**Figure D.27**



Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



Gustavus Airport Quarterly Groundwater Monitoring Summary  
Gustavus, Alaska

**QUARTERLY LINE GRAPH**

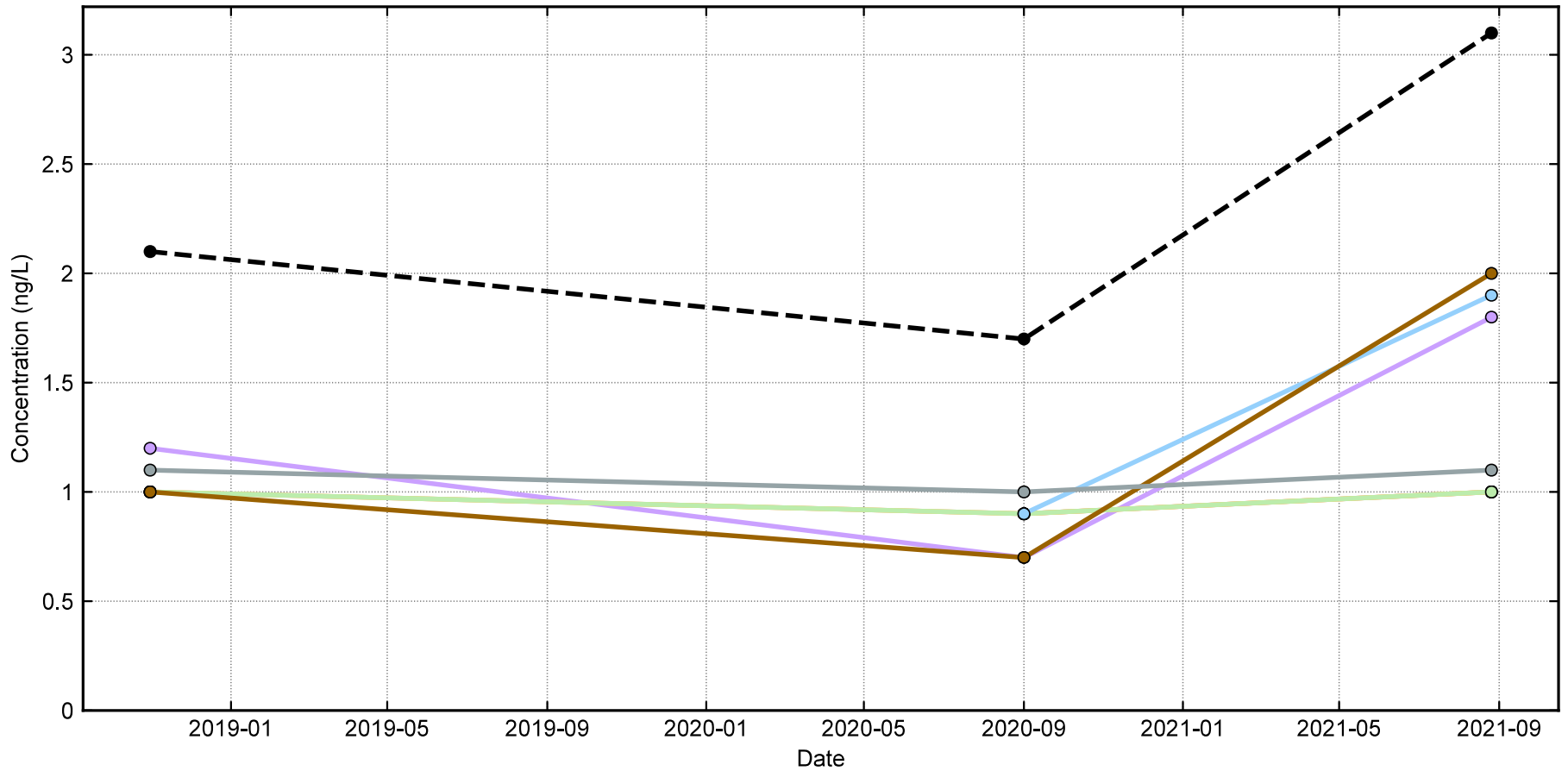
**PW-21**

May 2023 102599-023

**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants

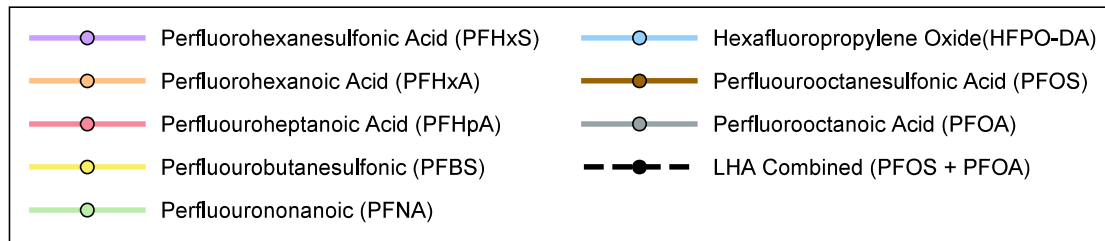
**Figure D.28**

Figure D.28



Notes:

1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
2. Duplicate values were assigned to be the higher of the two results.
3. J-flagged values were assigned to be the estimated value reported.



Gustavus Airport Quarterly Groundwater Monitoring Summary  
Gustavus, Alaska

**QUARTERLY LINE GRAPH**

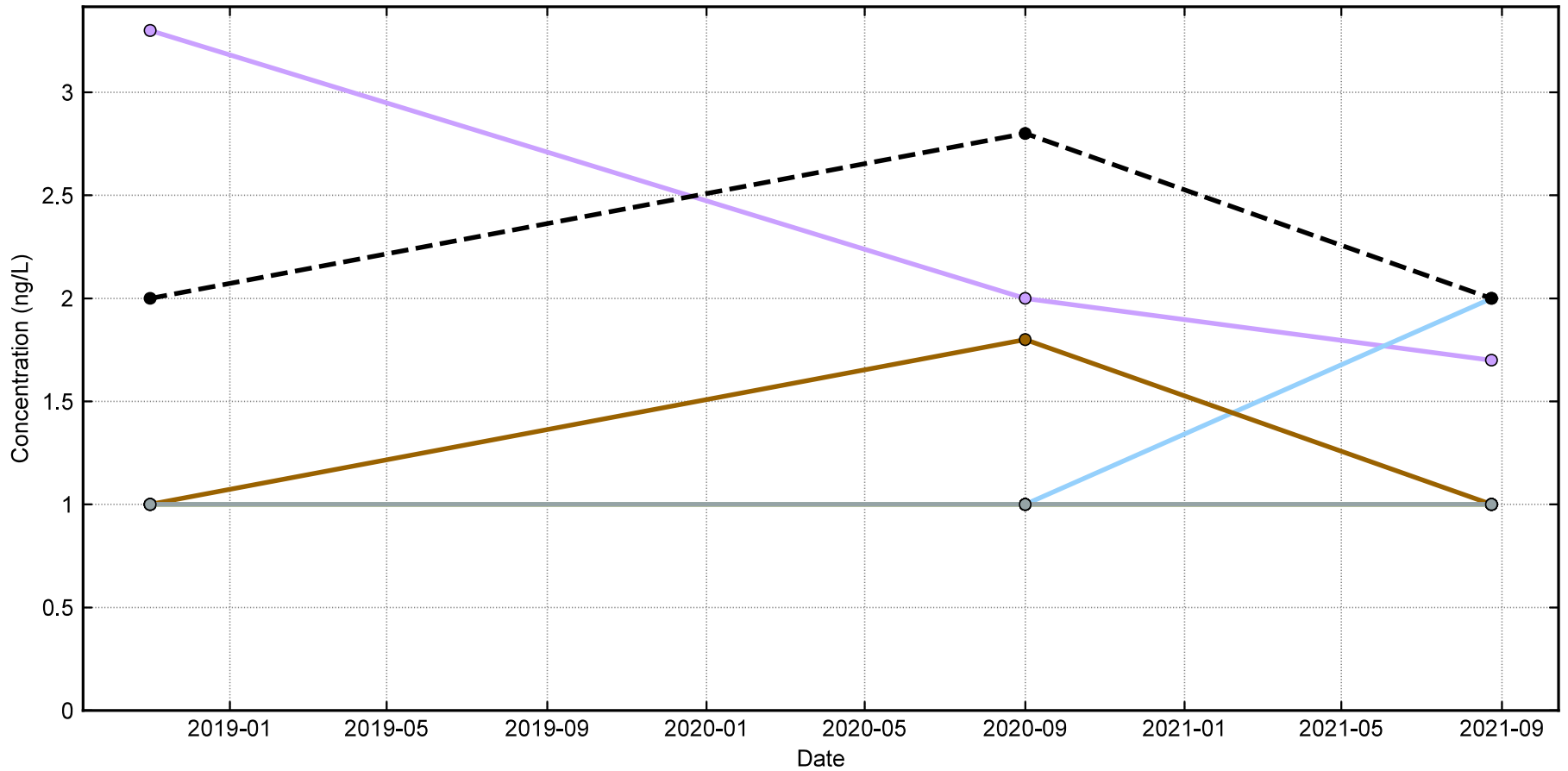
**PW-230**

May 2023 102599-023

**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants

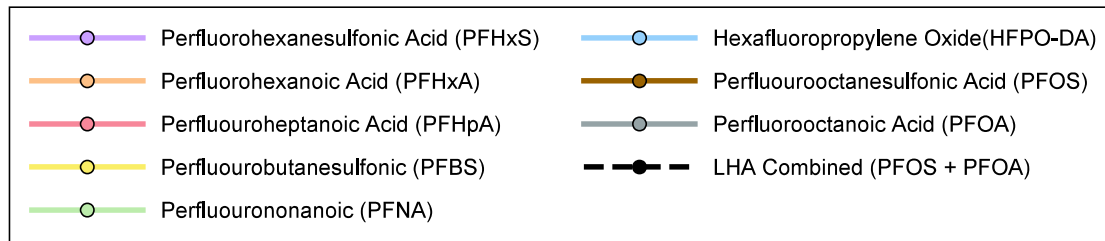
**Figure D.29**

Figure D.29



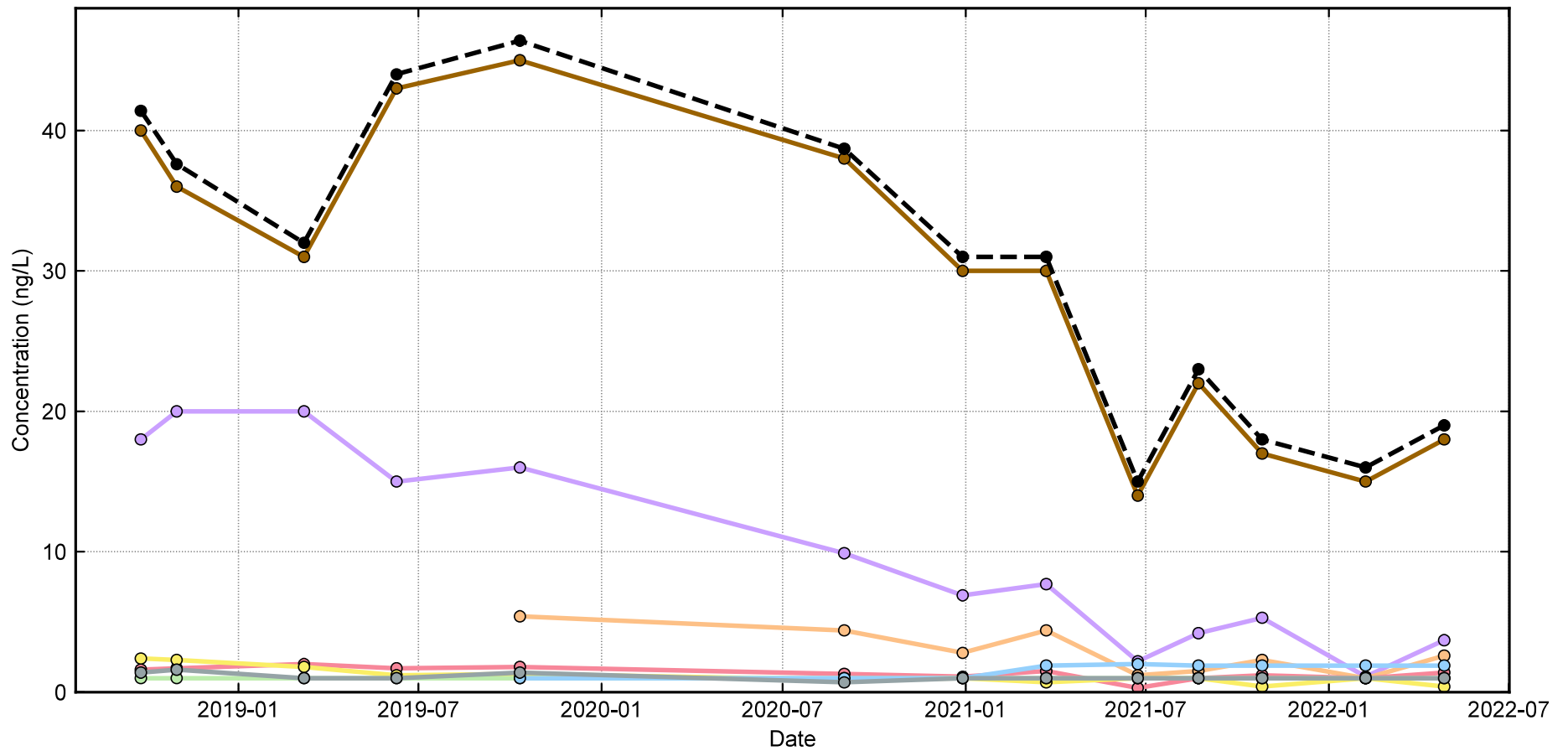
Notes:

1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
2. Duplicate values were assigned to be the higher of the two results.
3. J-flagged values were assigned to be the estimated value reported.



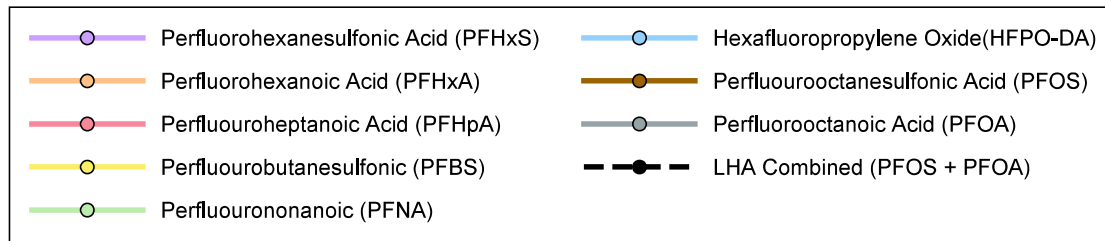
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>PW-240</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.30</b>

Figure D.30



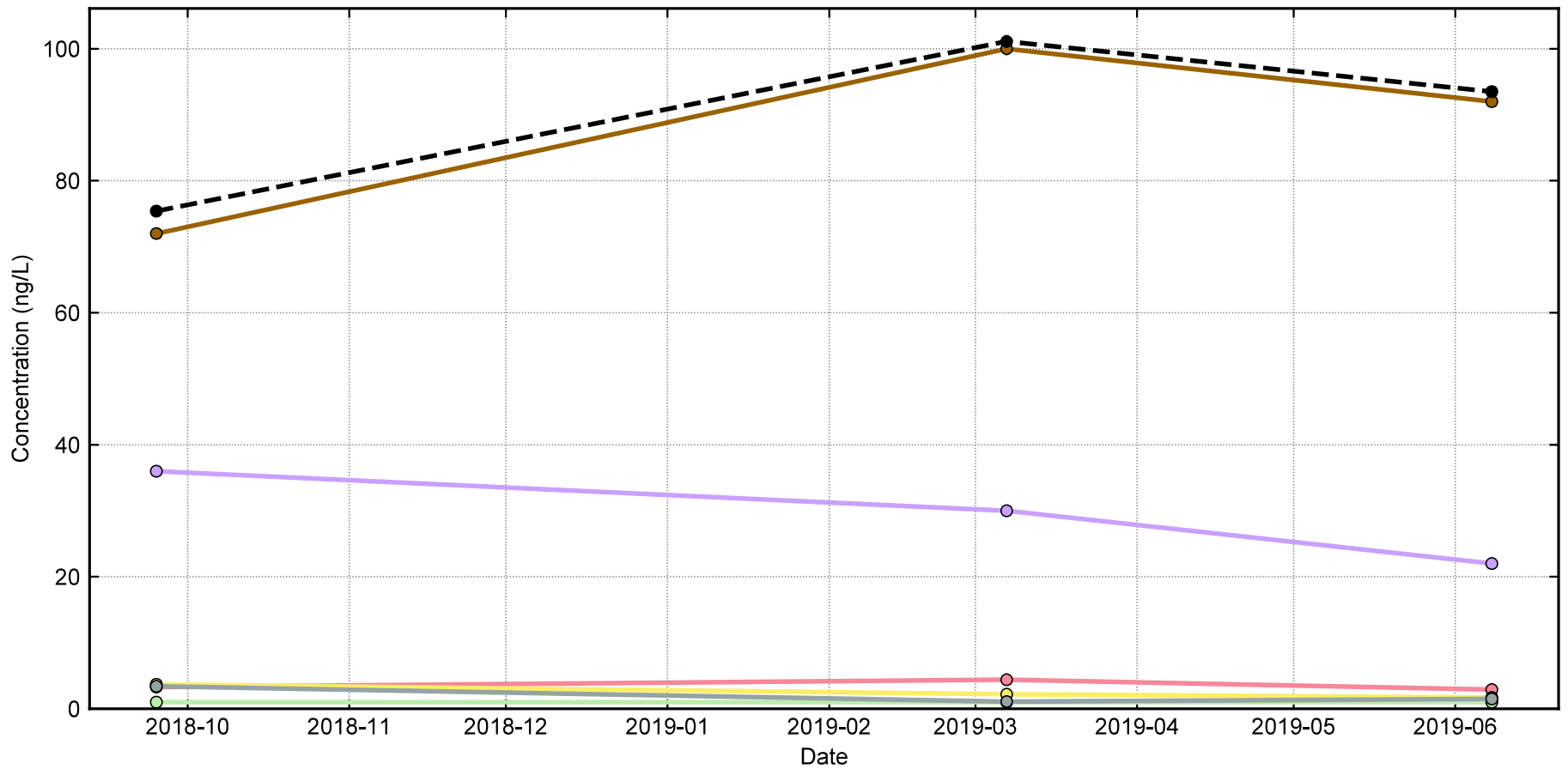
Notes:

1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
2. Duplicate values were assigned to be the higher of the two results.
3. J-flagged values were assigned to be the estimated value reported.



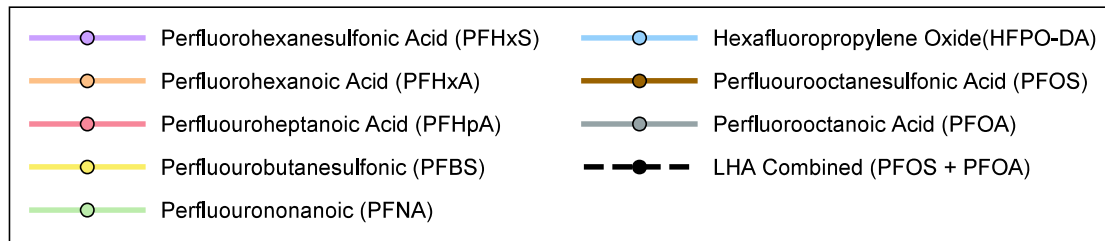
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>PW-401</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.31</b>

Figure D.31



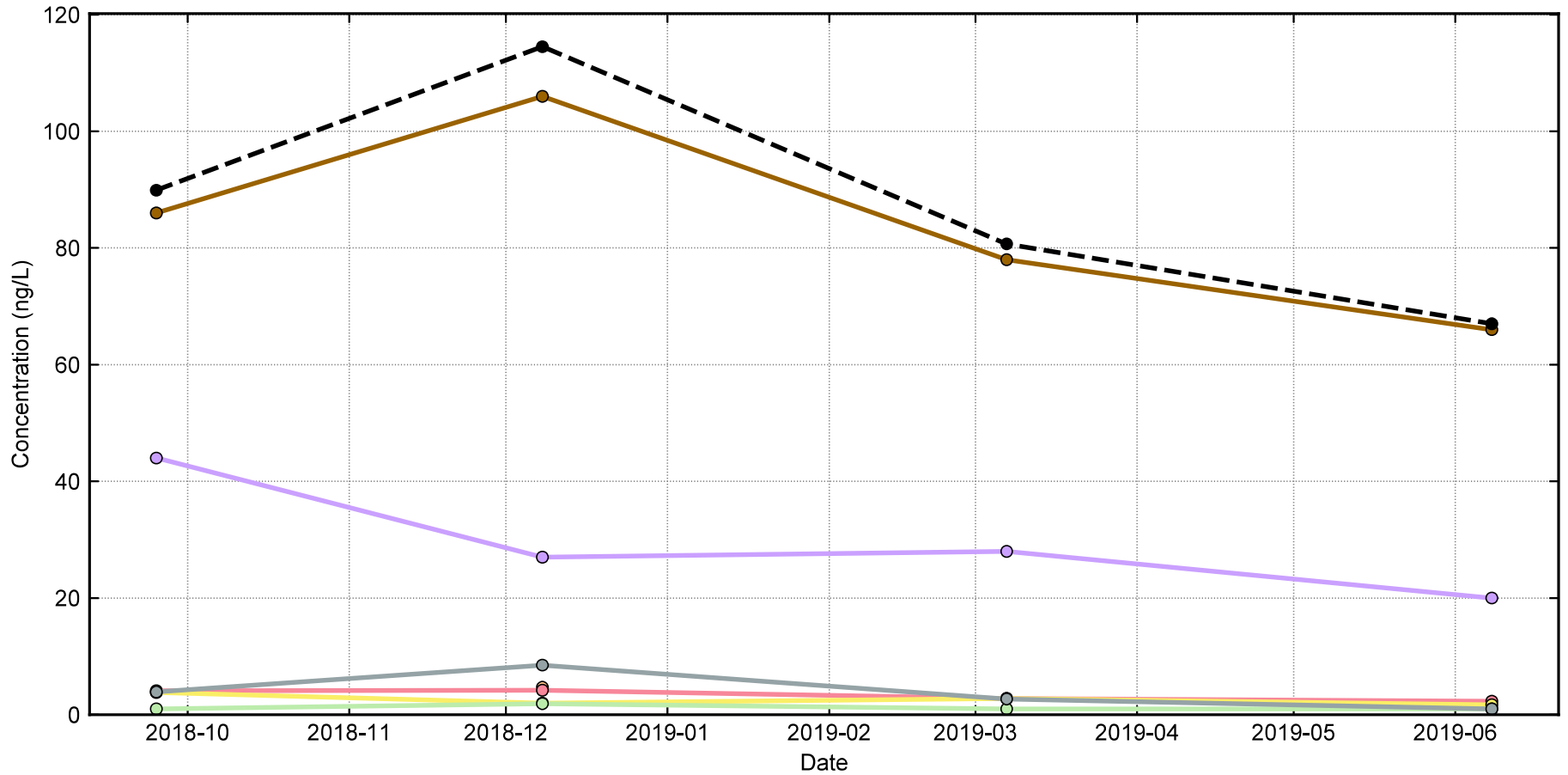
Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



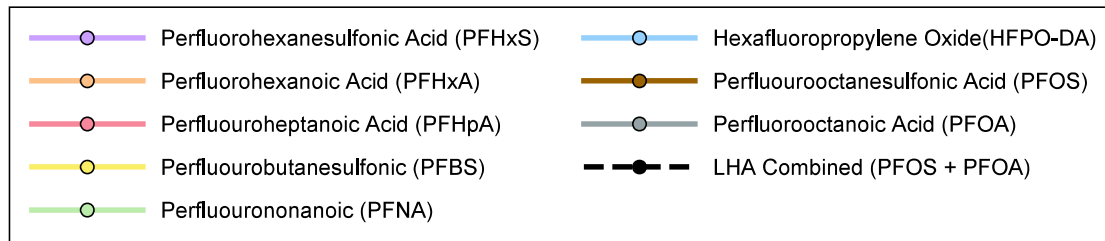
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>PW-402</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.32</b>

Figure D.32



Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



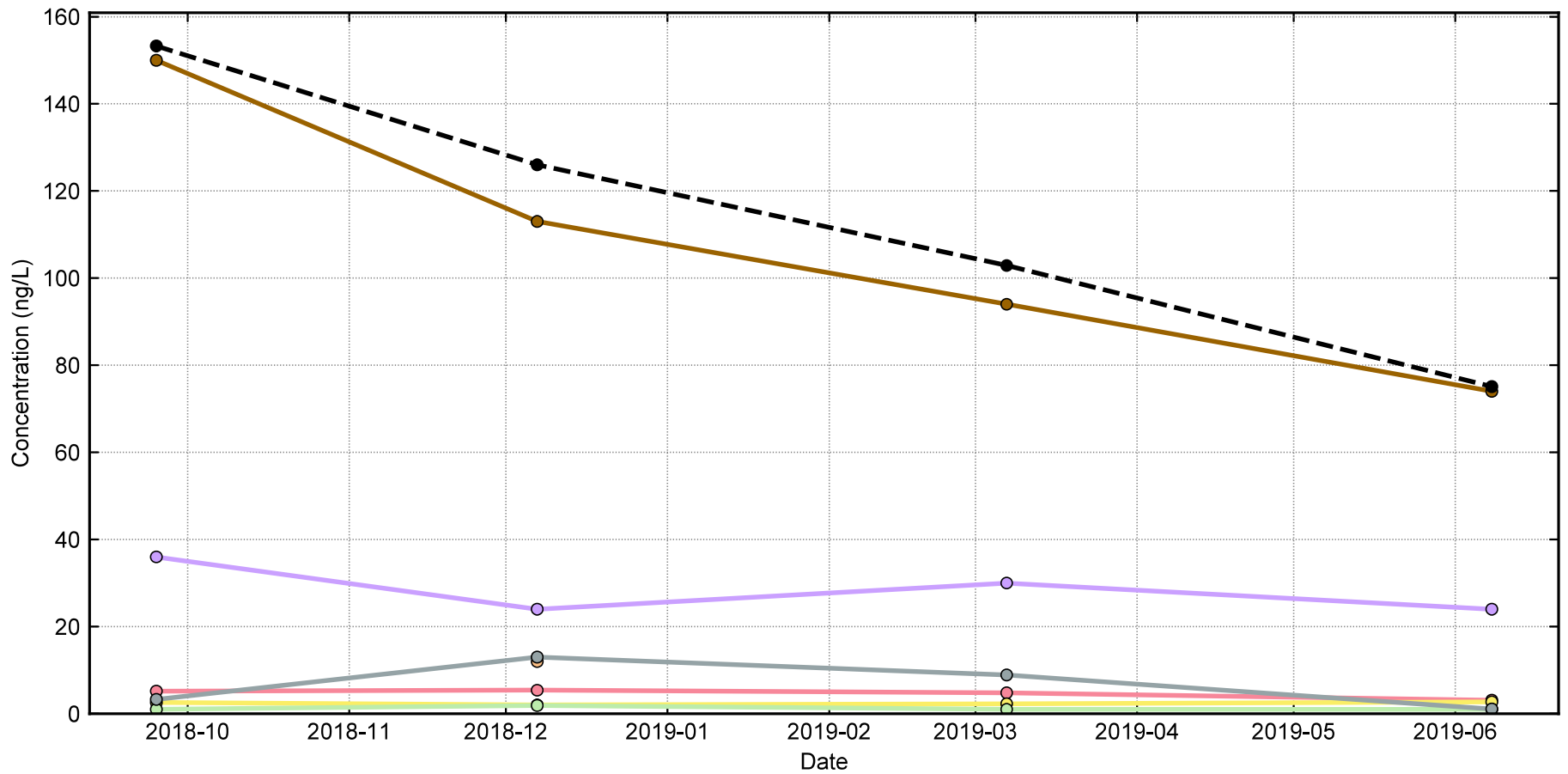
Gustavus Airport Quarterly Groundwater  
Monitoring Summary  
Gustavus, Alaska

**QUARTERLY LINE GRAPH**

**PW-405**

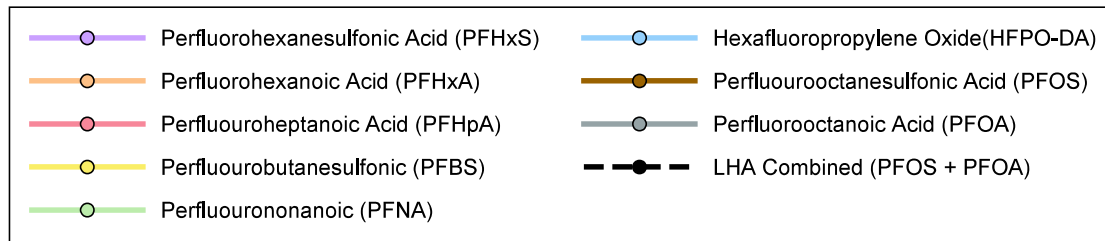
May 2023 102599-023

**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants **Figure D.33**



Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



Gustavus Airport Quarterly Groundwater  
Monitoring Summary  
Gustavus, Alaska

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**QUARTERLY LINE GRAPH**

**PW-406**

May 2023 102599-023

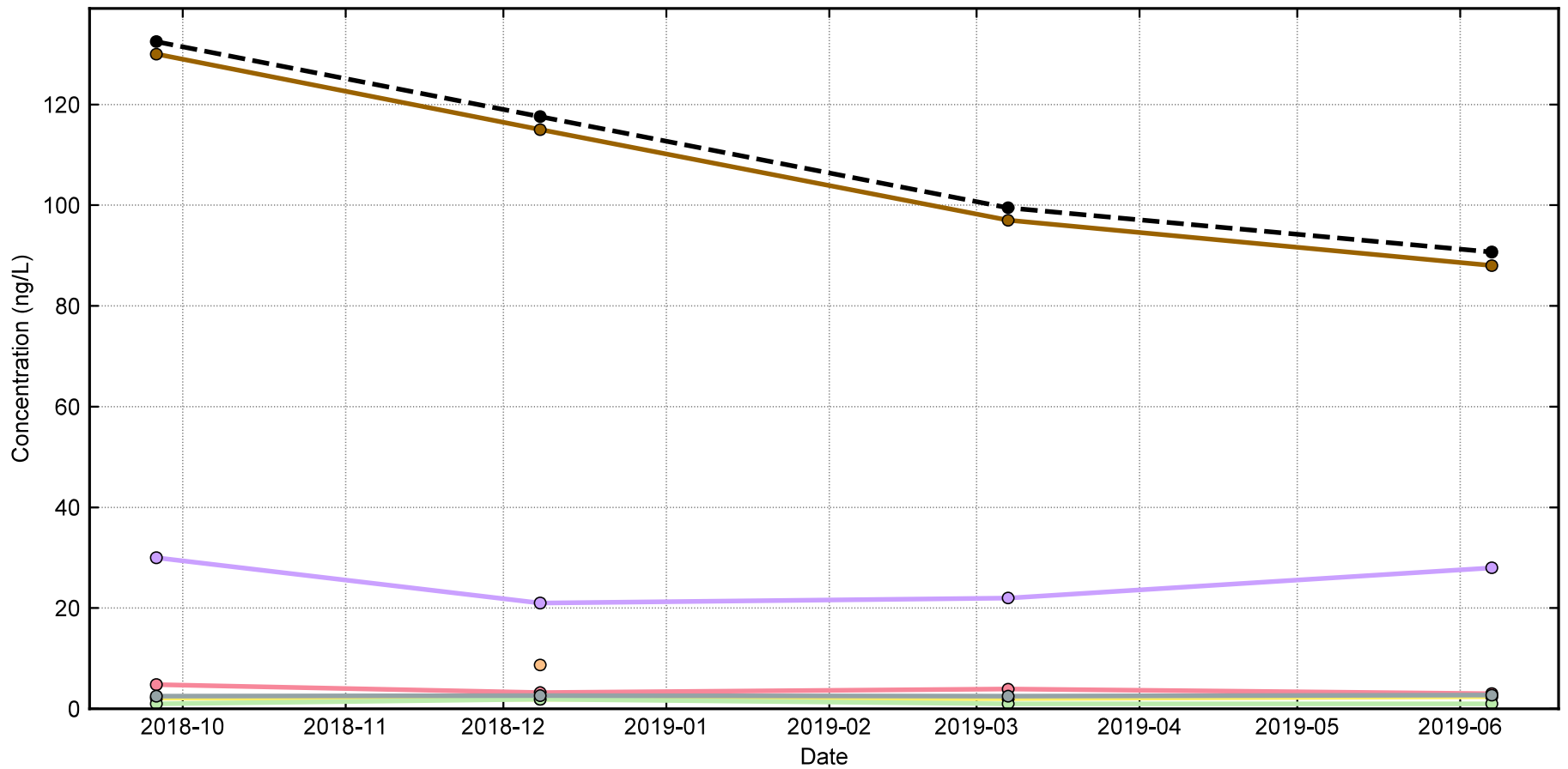
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**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants

**Figure D.34**

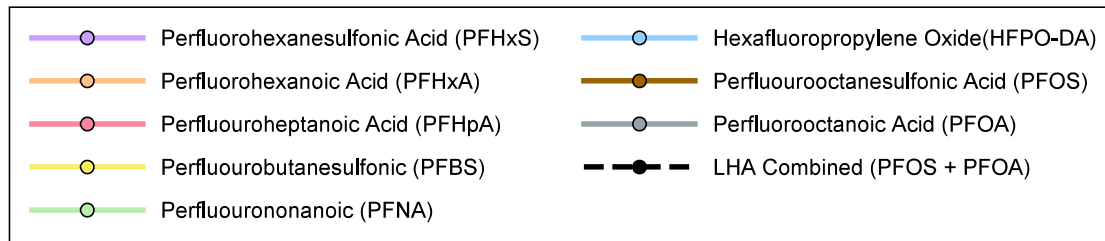
Figure D.34



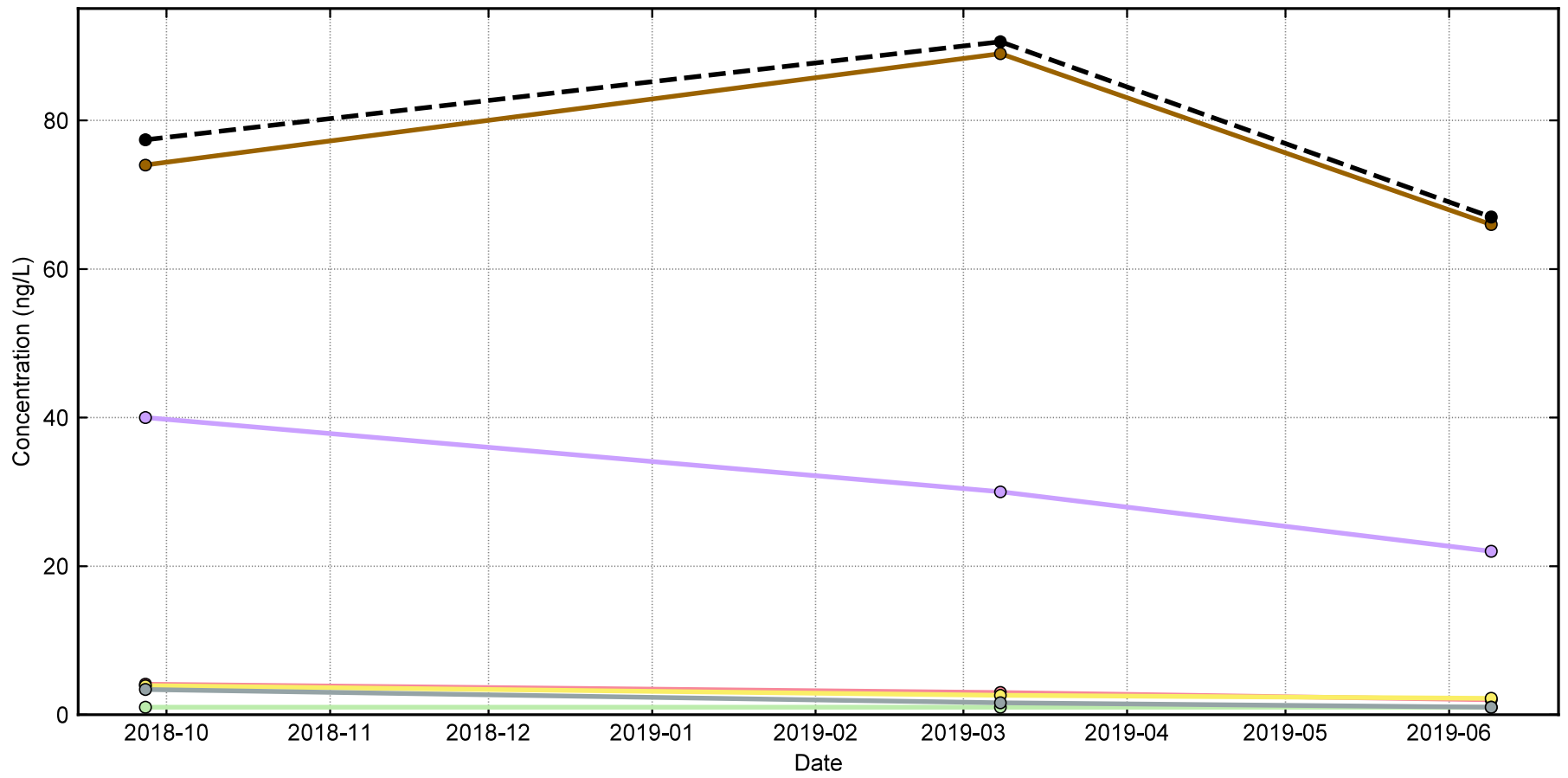


Notes:

1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
2. Duplicate values were assigned to be the higher of the two results.
3. J-flagged values were assigned to be the estimated value reported.

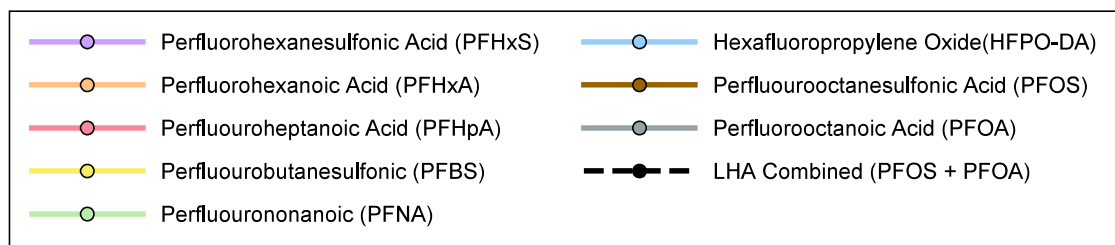


Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>PW-408</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.35</b>



Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



Gustavus Airport Quarterly Groundwater  
Monitoring Summary  
Gustavus, Alaska

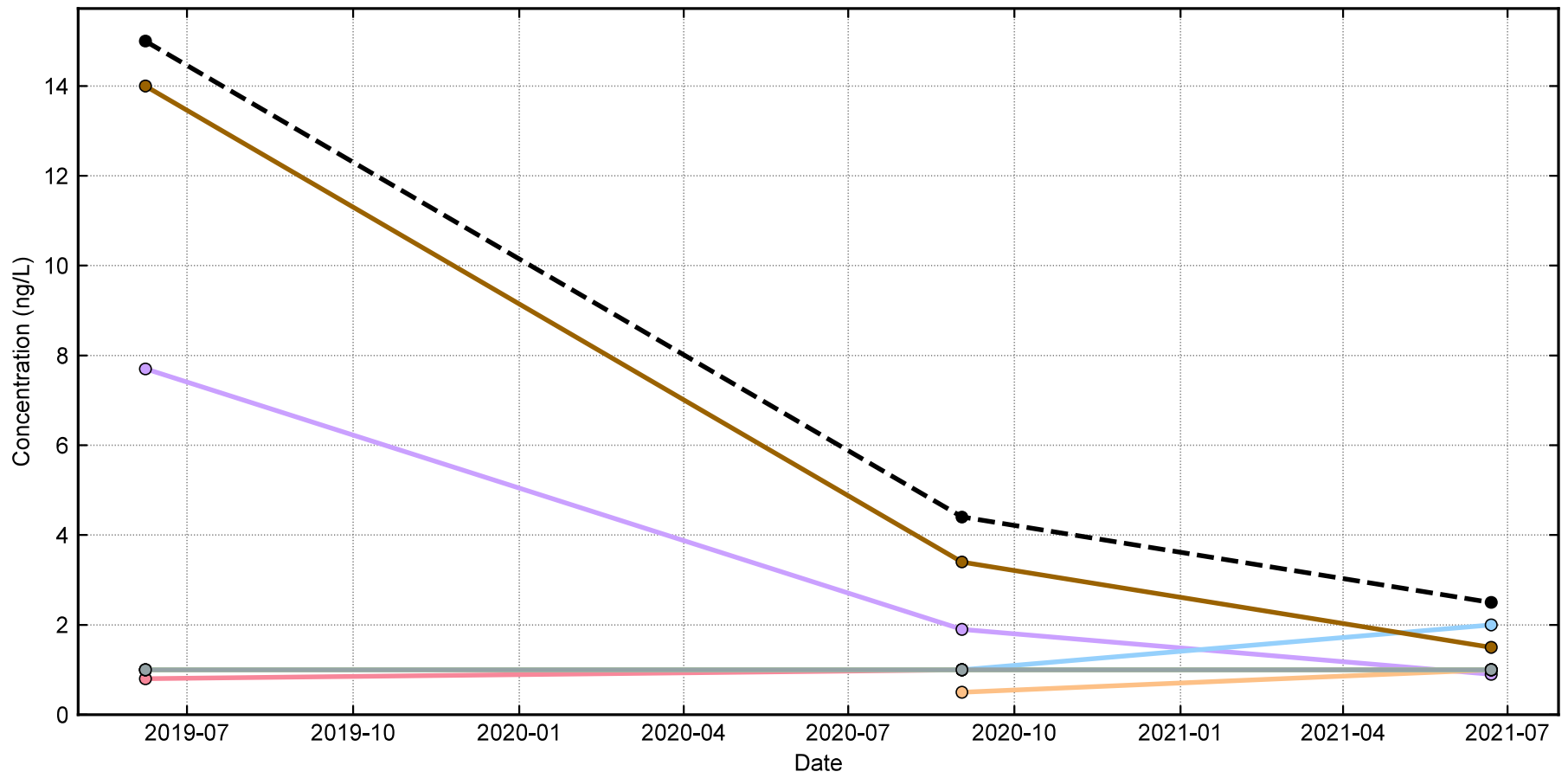
**QUARTERLY LINE GRAPH**

**PW-418**

May 2023 102599-023

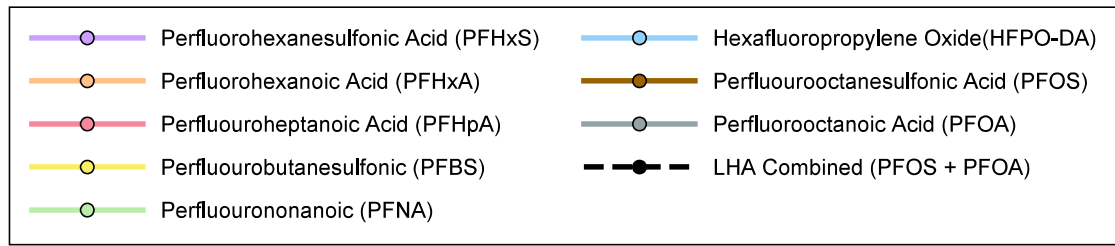
**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants **Figure D.36**

**Figure D.36**



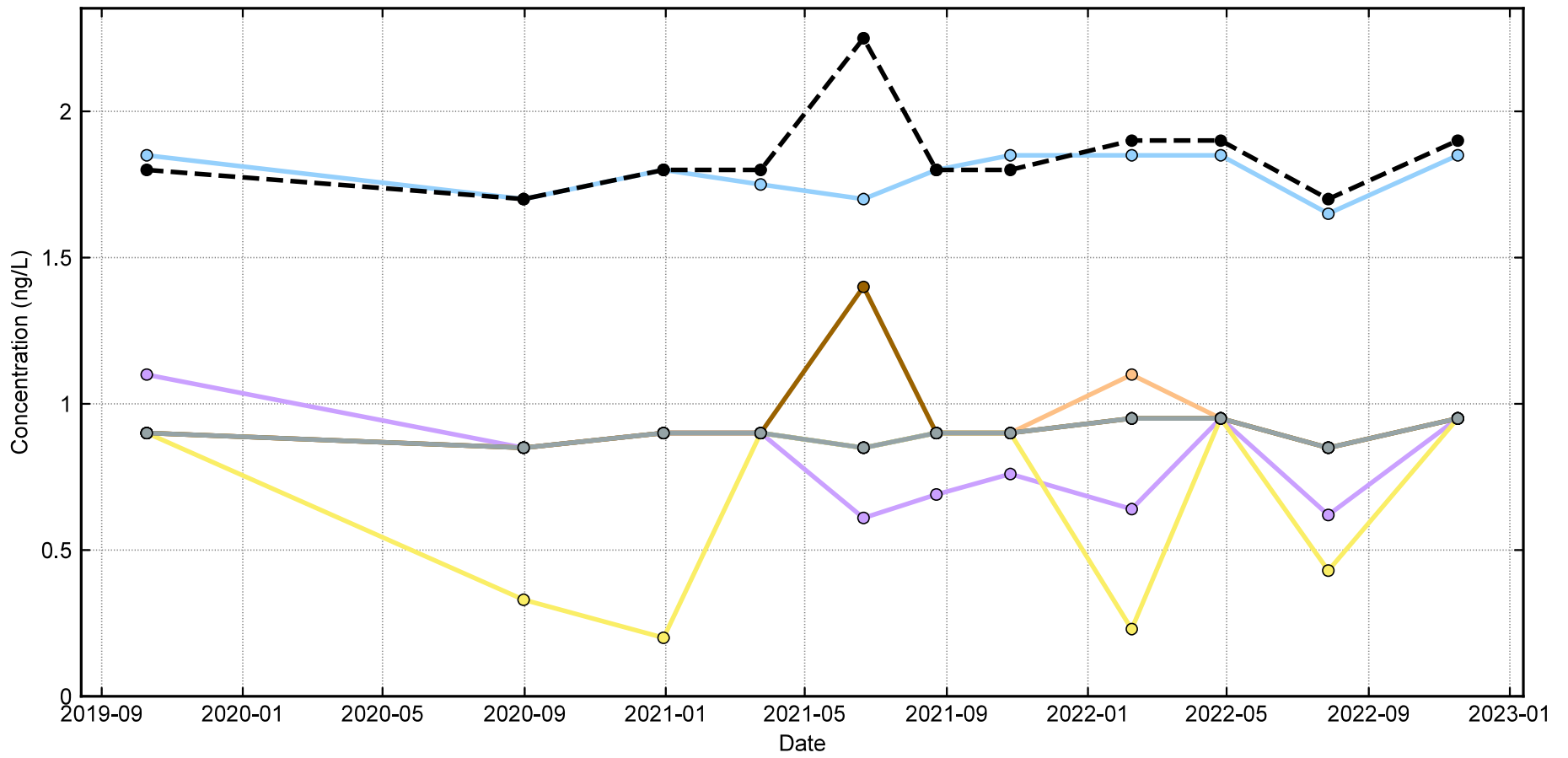
Notes:

1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
2. Duplicate values were assigned to be the higher of the two results.
3. J-flagged values were assigned to be the estimated value reported.



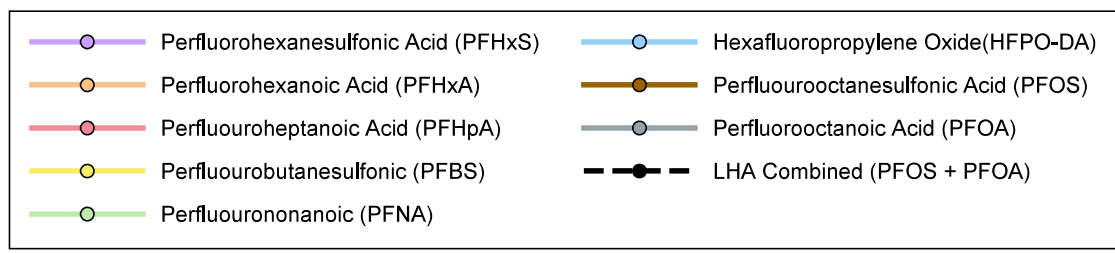
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>PW-419</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.37</b>

Figure D.37



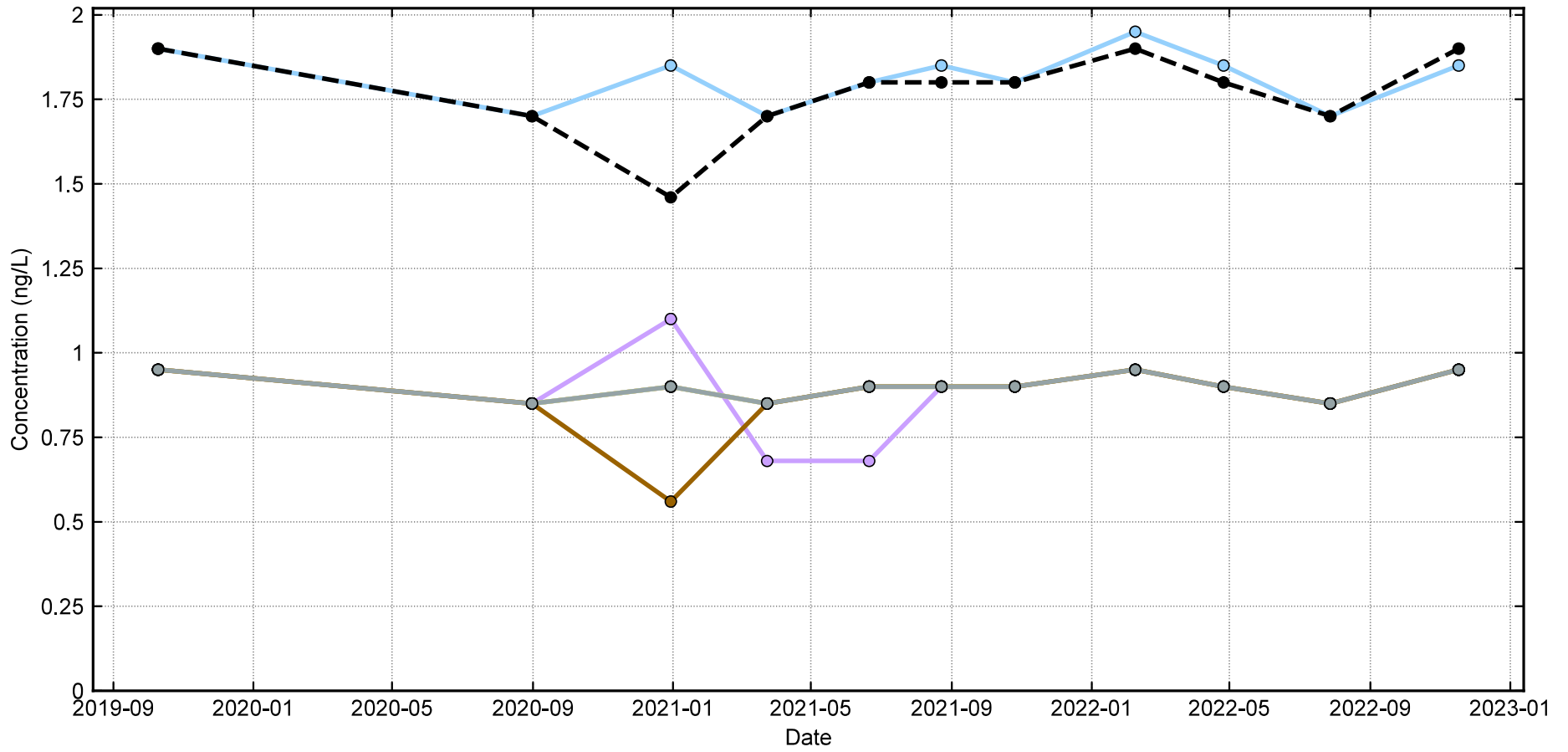
Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>MW-1-15</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.38</b>

Figure D.40

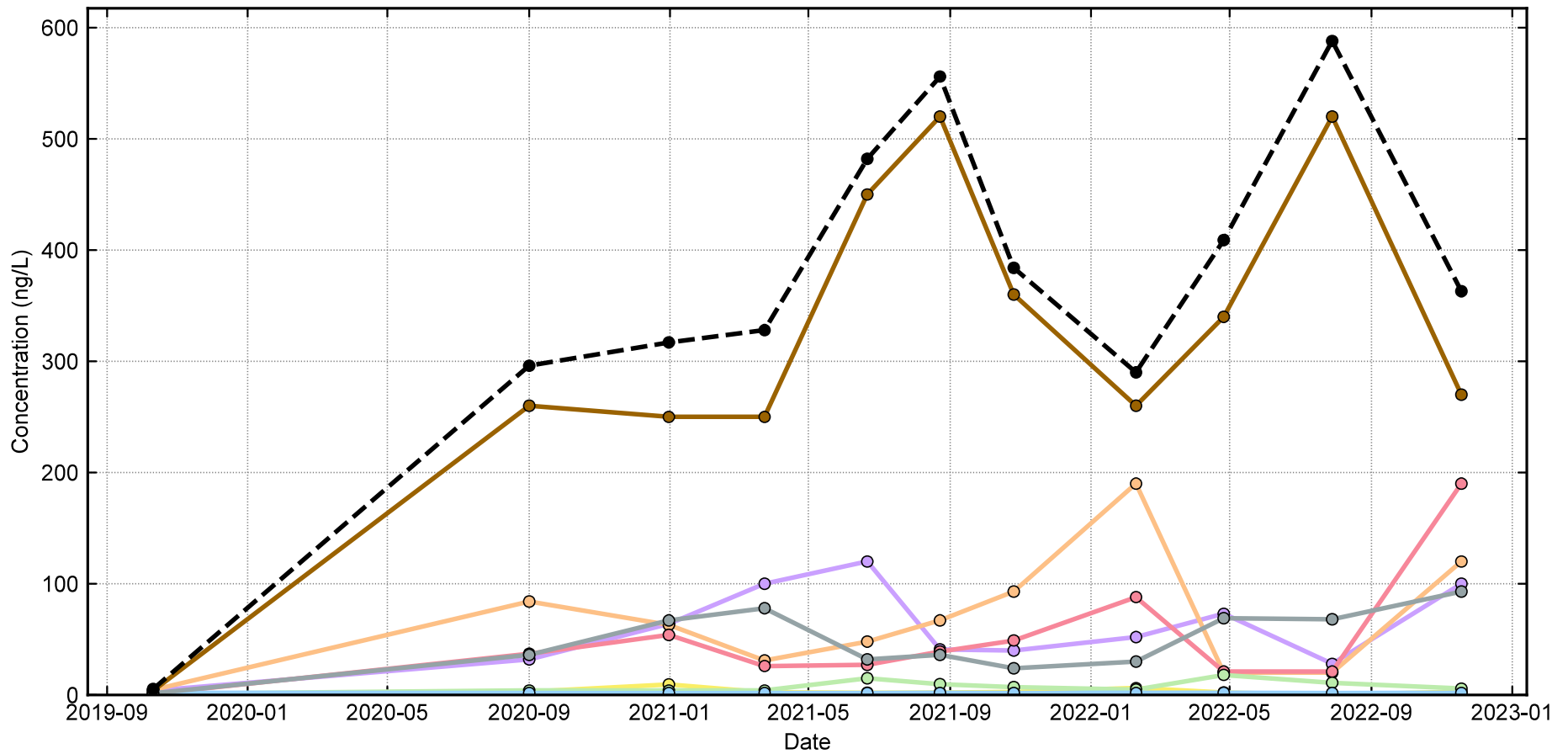


- Notes:
1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
  2. Duplicate values were assigned to be the higher of the two results.
  3. J-flagged values were assigned to be the estimated value reported.

Perfluorohexanesulfonic Acid (PFHxS)	Hexafluoropropylene Oxide (HFPO-DA)
Perfluorohexanoic Acid (PFHxA)	Perfluorooctanesulfonic Acid (PFOS)
Perfluoroheptanoic Acid (PFHpA)	Perfluorooctanoic Acid (PFOA)
Perfluorobutanesulfonic Acid (PFBS)	LHA Combined (PFOS + PFOA)
Perfluorononanoic Acid (PFNA)	

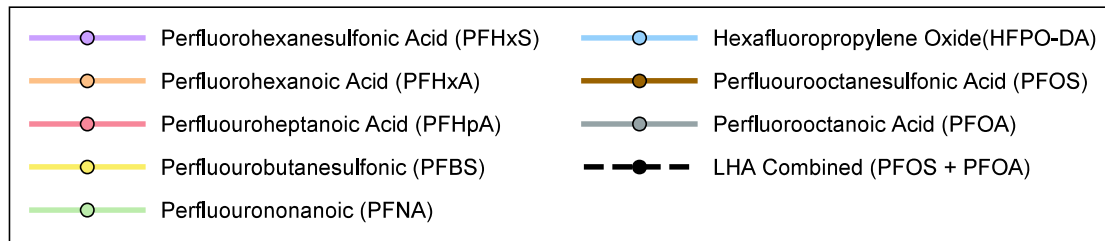
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>MW-1-40</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.39</b>

Figure D.42



Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



Gustavus Airport Quarterly Groundwater Monitoring Summary  
Gustavus, Alaska

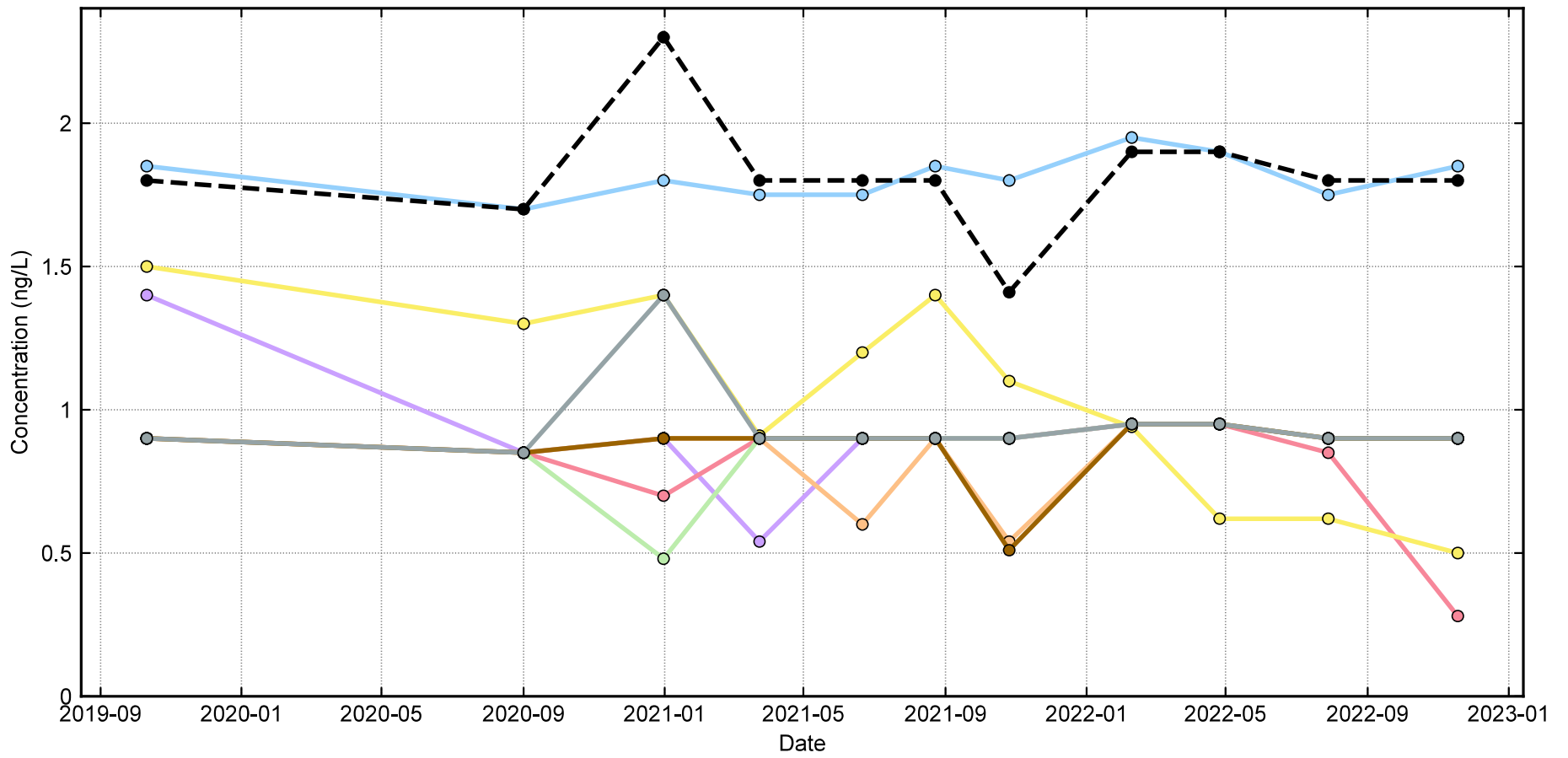
**QUARTERLY LINE GRAPH**

**MW-2-20**

May 2023 102599-023

**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants **Figure D.40**

Figure D.43



- Notes:
1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
  2. Duplicate values were assigned to be the higher of the two results.
  3. J-flagged values were assigned to be the estimated value reported.

Perfluorohexanesulfonic Acid (PFHxS)	Hexafluoropropylene Oxide(HFPO-DA)
Perfluorohexanoic Acid (PFHxA)	Perfluorooctanesulfonic Acid (PFOS)
Perfluoroheptanoic Acid (PFHpA)	Perfluorooctanoic Acid (PFOA)
Perfluorobutanesulfonic (PFBS)	LHA Combined (PFOS + PFOA)
Perfluorononanoic (PFNA)	

Gustavus Airport Quarterly Groundwater Monitoring Summary  
Gustavus, Alaska

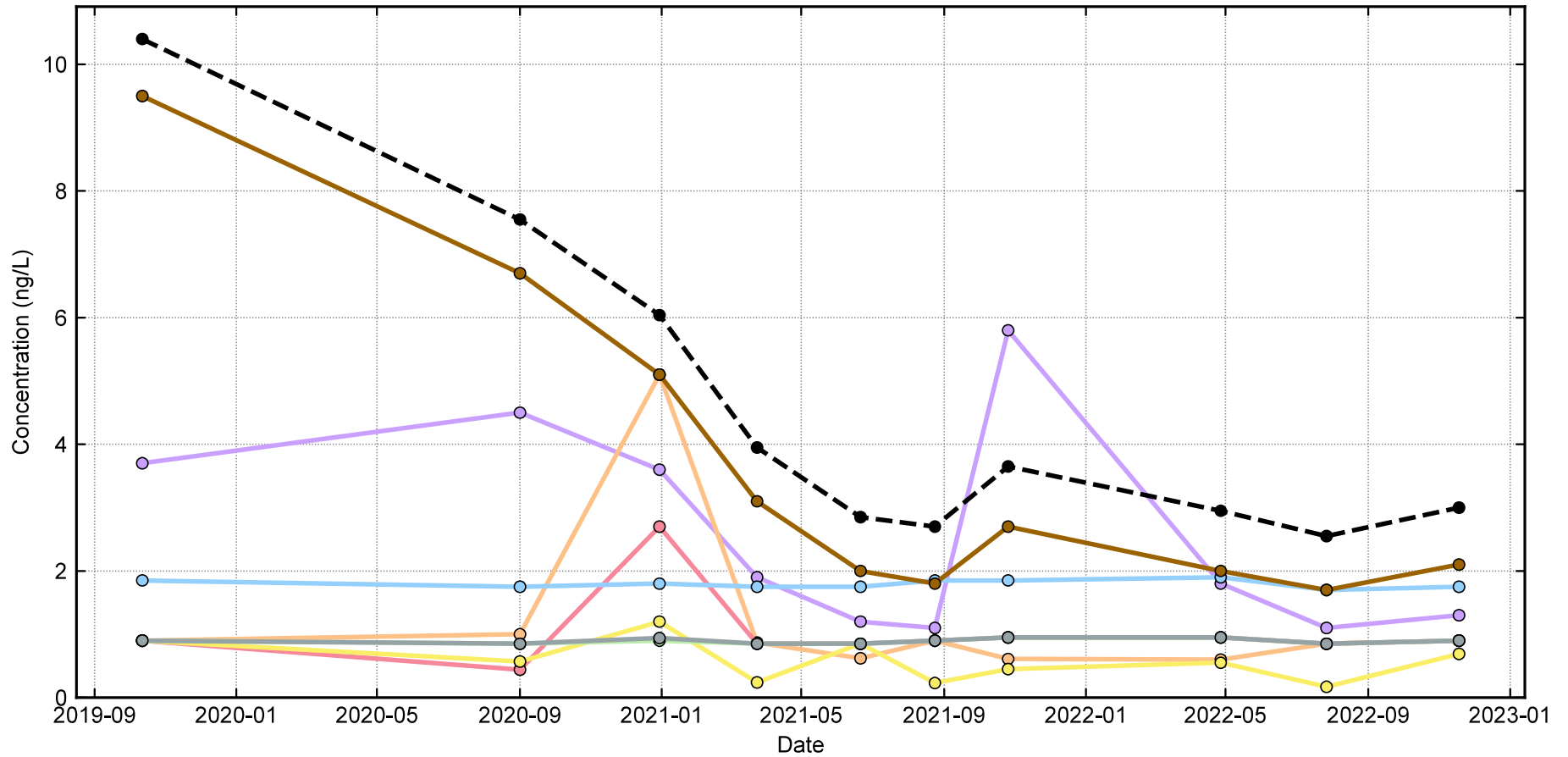
**QUARTERLY LINE GRAPH**

**MW-2-30**

May 2023 102599-023

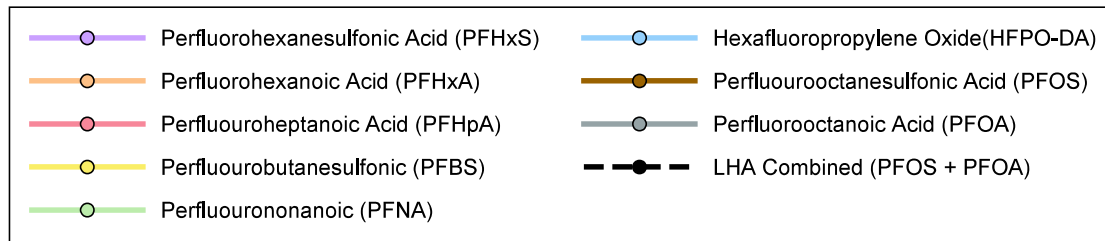
**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants

**Figure D.41**



Notes:

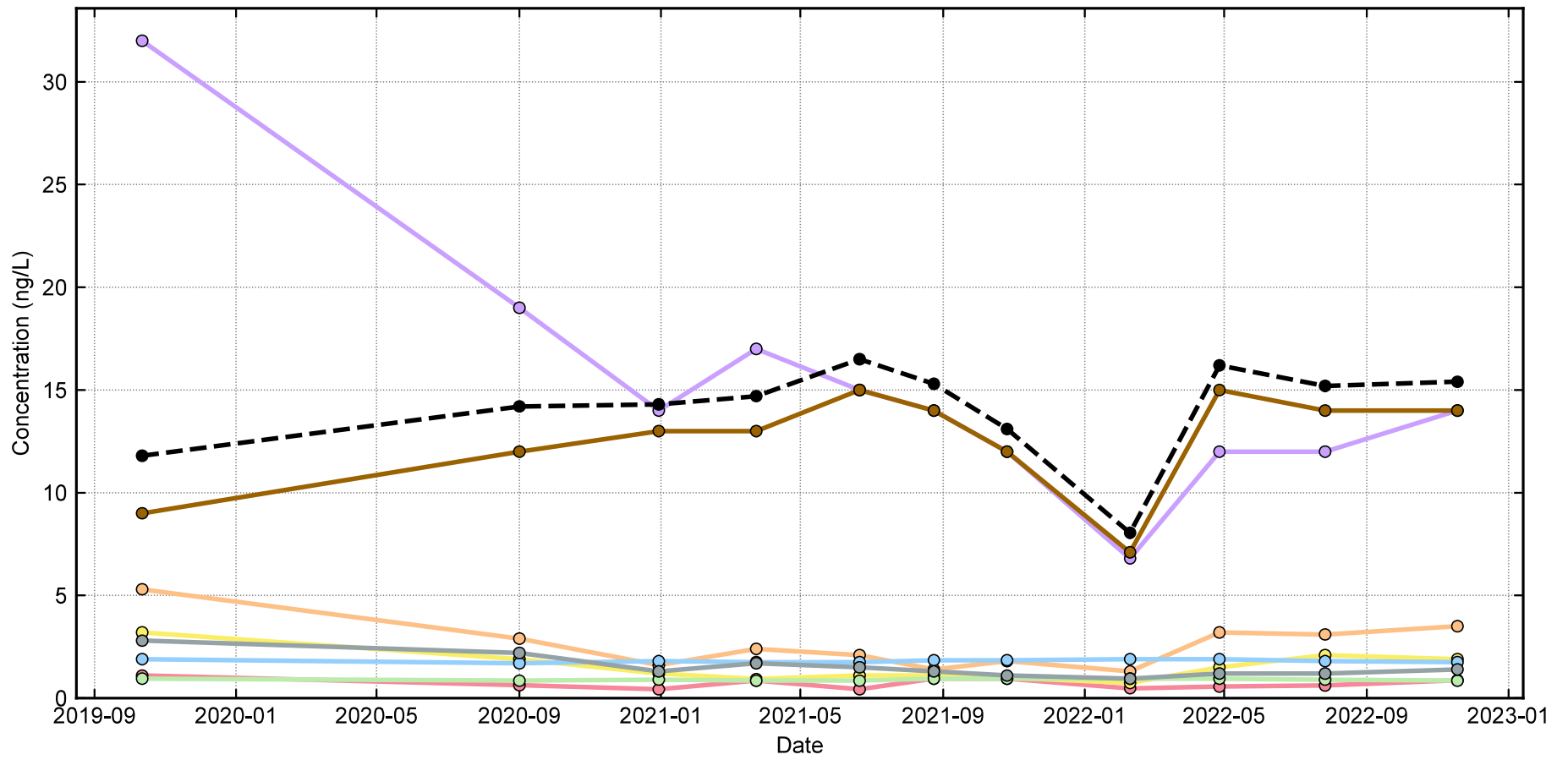
1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
2. Duplicate values were assigned to be the higher of the two results.
3. J-flagged values were assigned to be the estimated value reported.



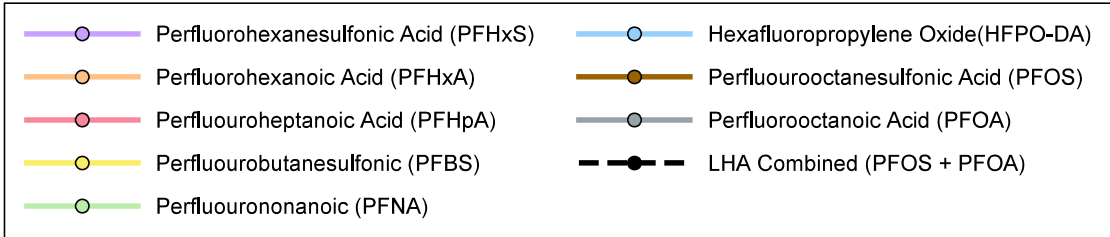
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>MW-3-15</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.42</b>

Figure D.45



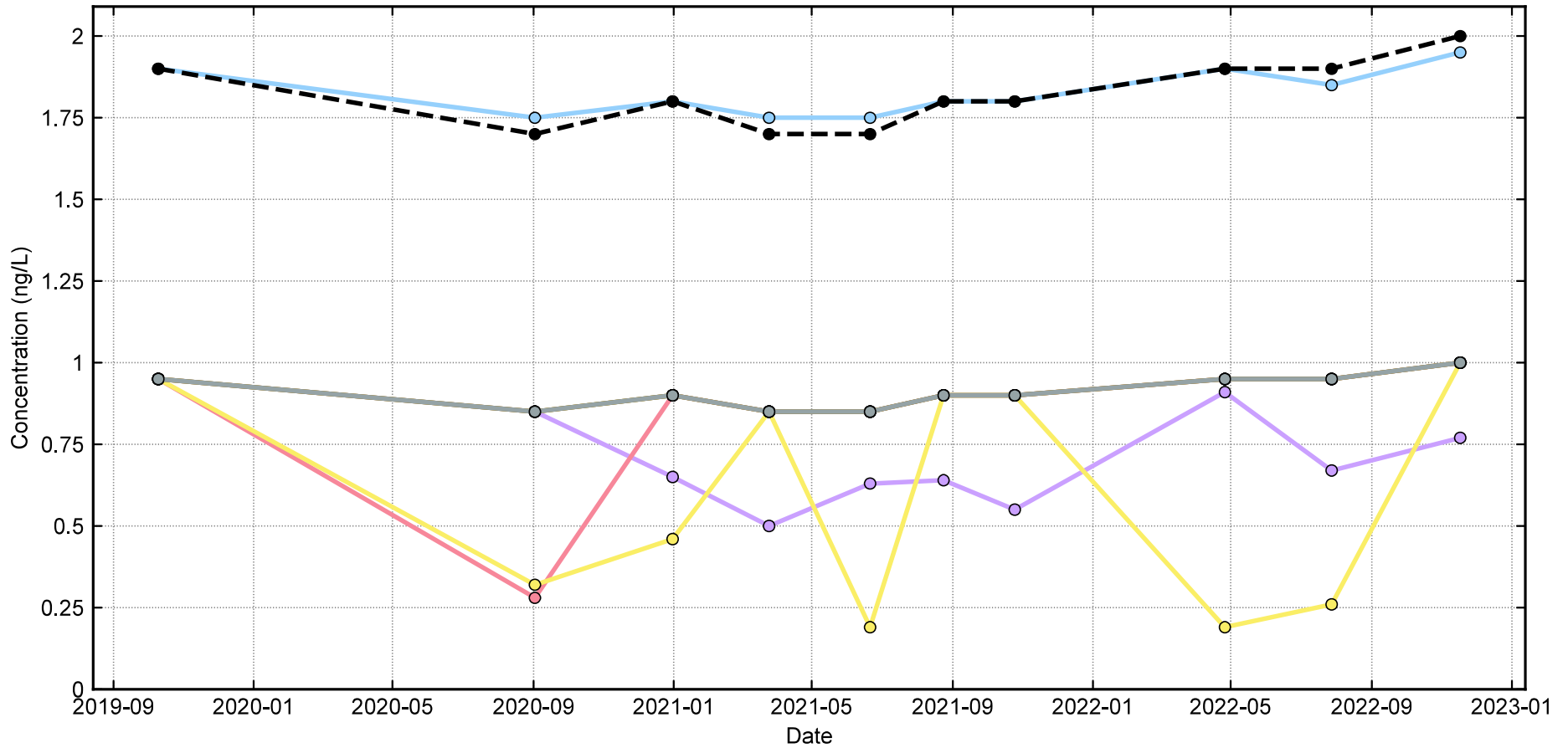


- Notes:
1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
  2. Duplicate values were assigned to be the higher of the two results.
  3. J-flagged values were assigned to be the estimated value reported.



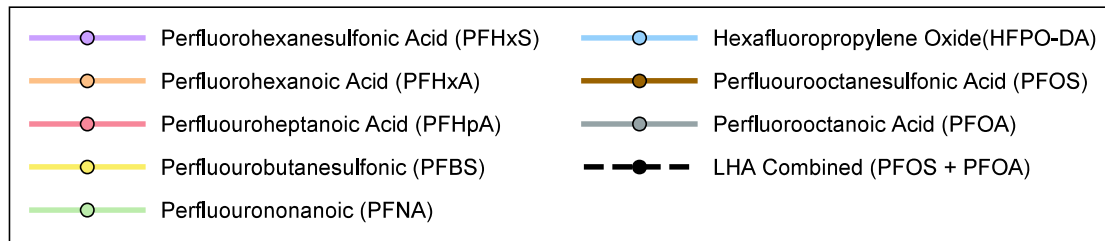
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>MW-3-40</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.43</b>

**Figure D.46**



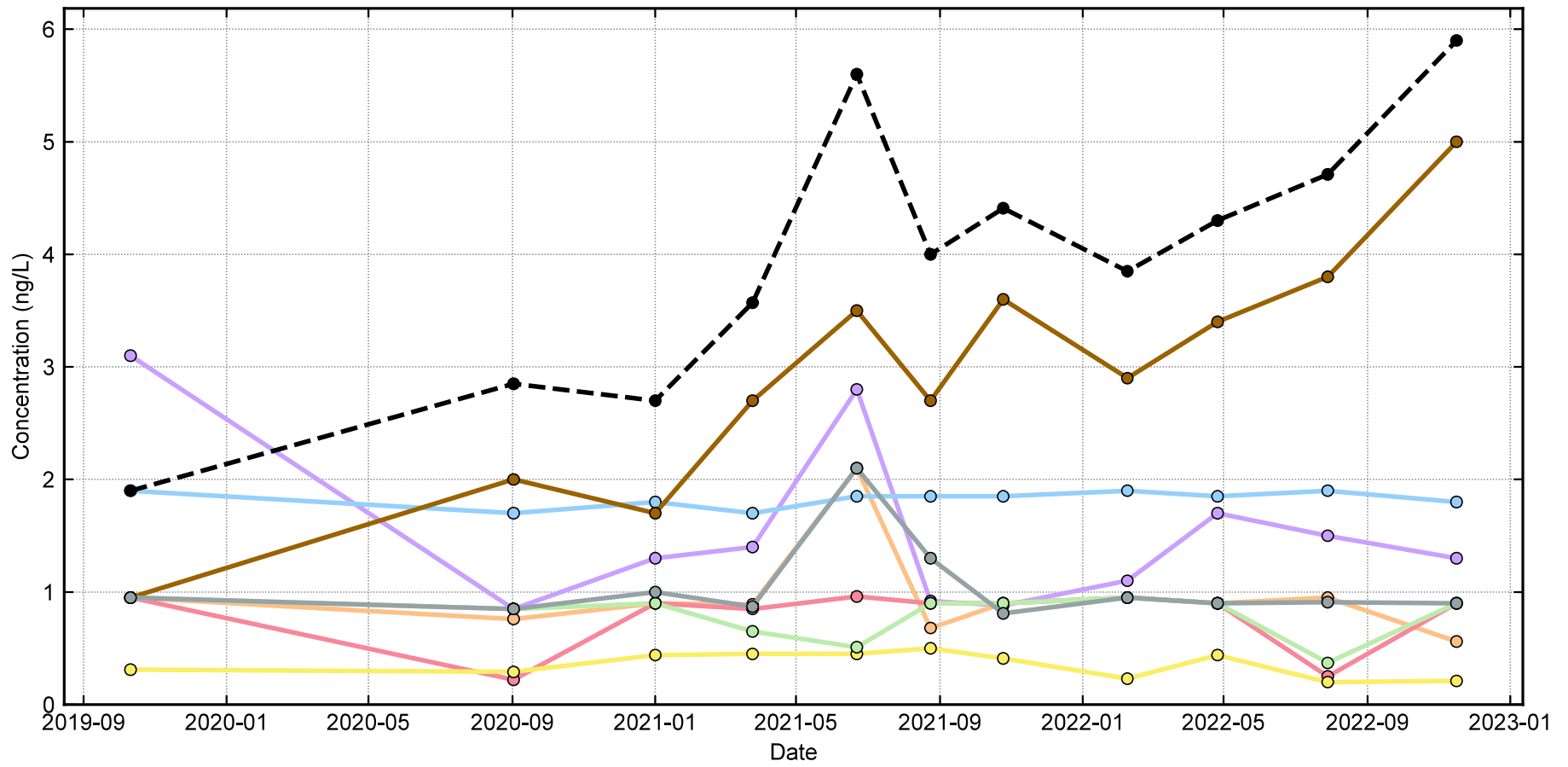
Notes:

1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
2. Duplicate values were assigned to be the higher of the two results.
3. J-flagged values were assigned to be the estimated value reported.



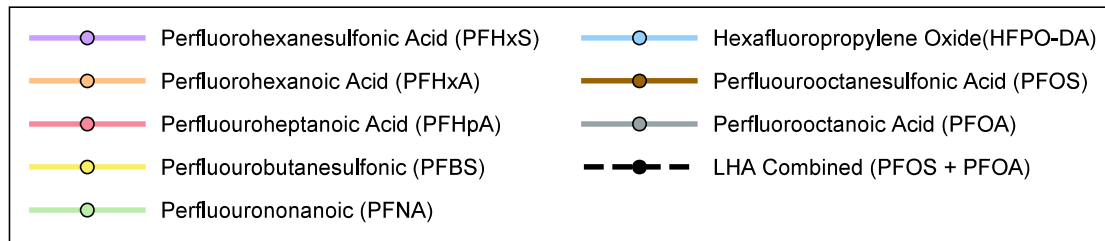
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>MW-4-20</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.44</b>

Figure D.47



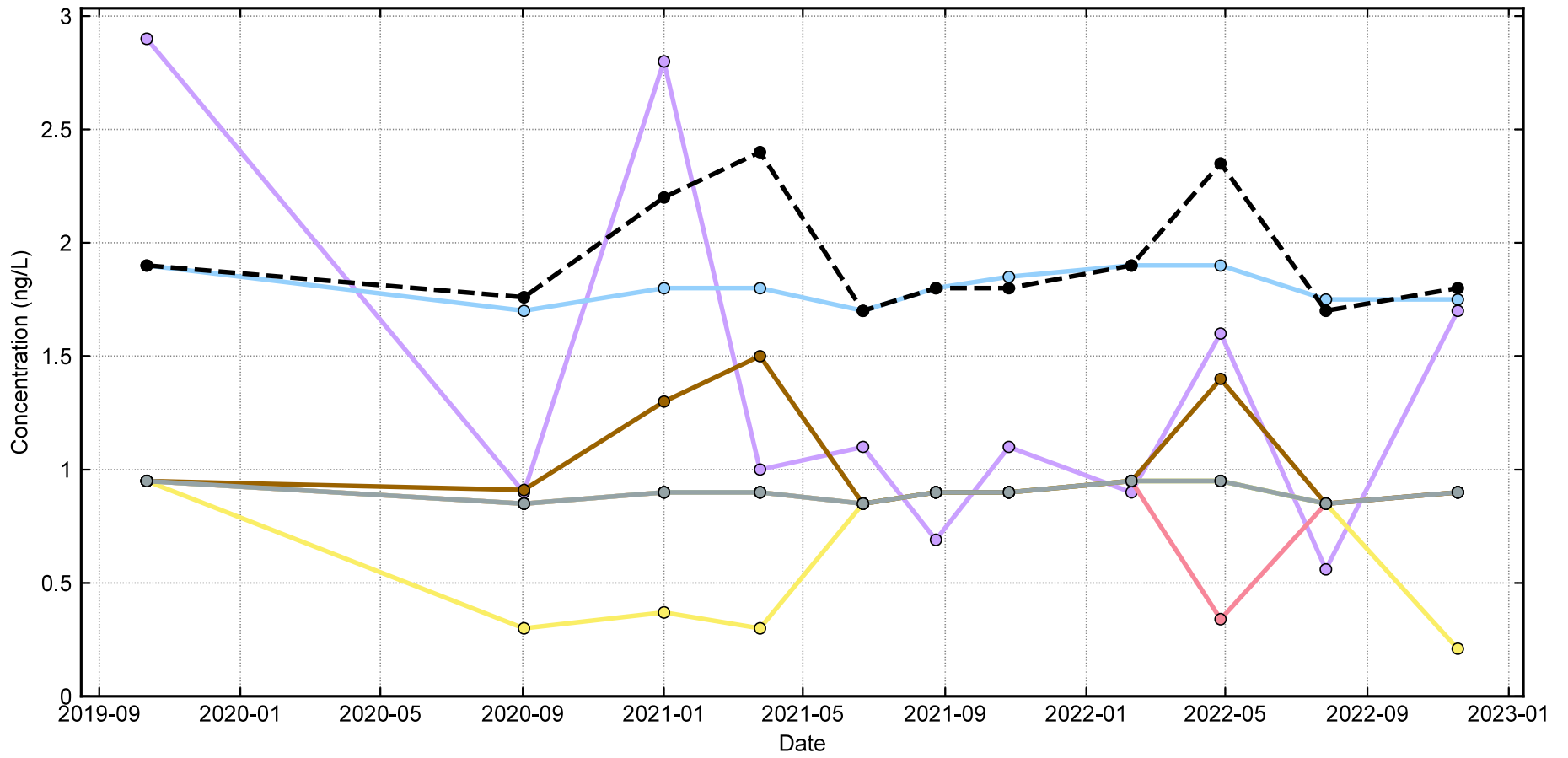
Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



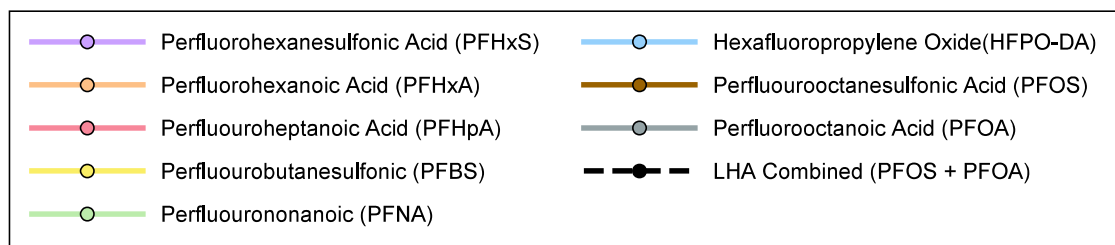
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>MW-5-20</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.45</b>

Figure D.48



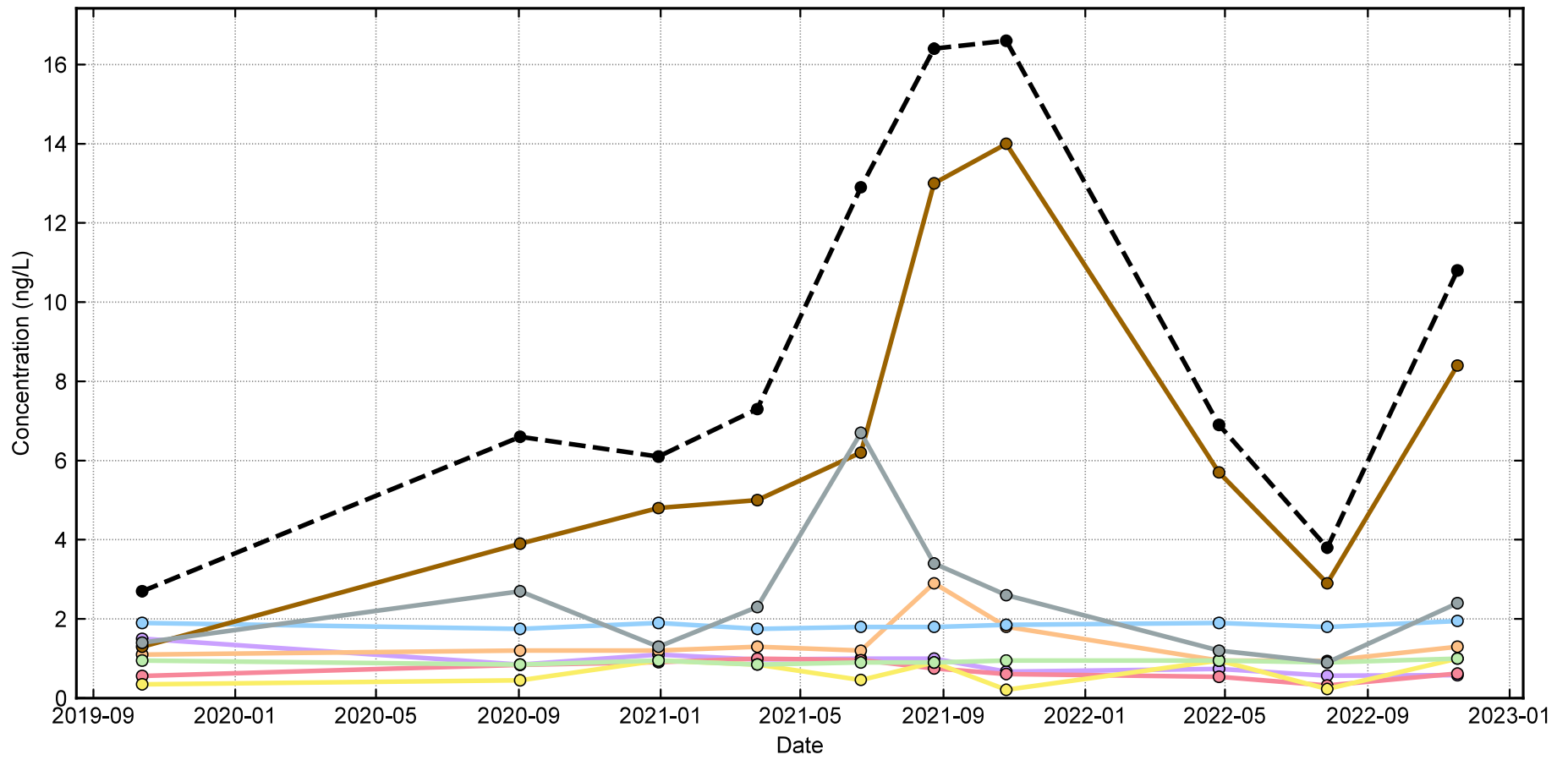
Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



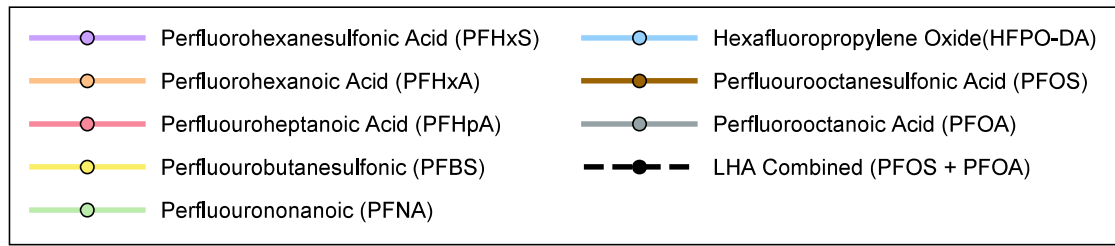
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>MW-6-20</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.46</b>

Figure D.49



Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



Gustavus Airport Quarterly Groundwater  
Monitoring Summary  
Gustavus, Alaska

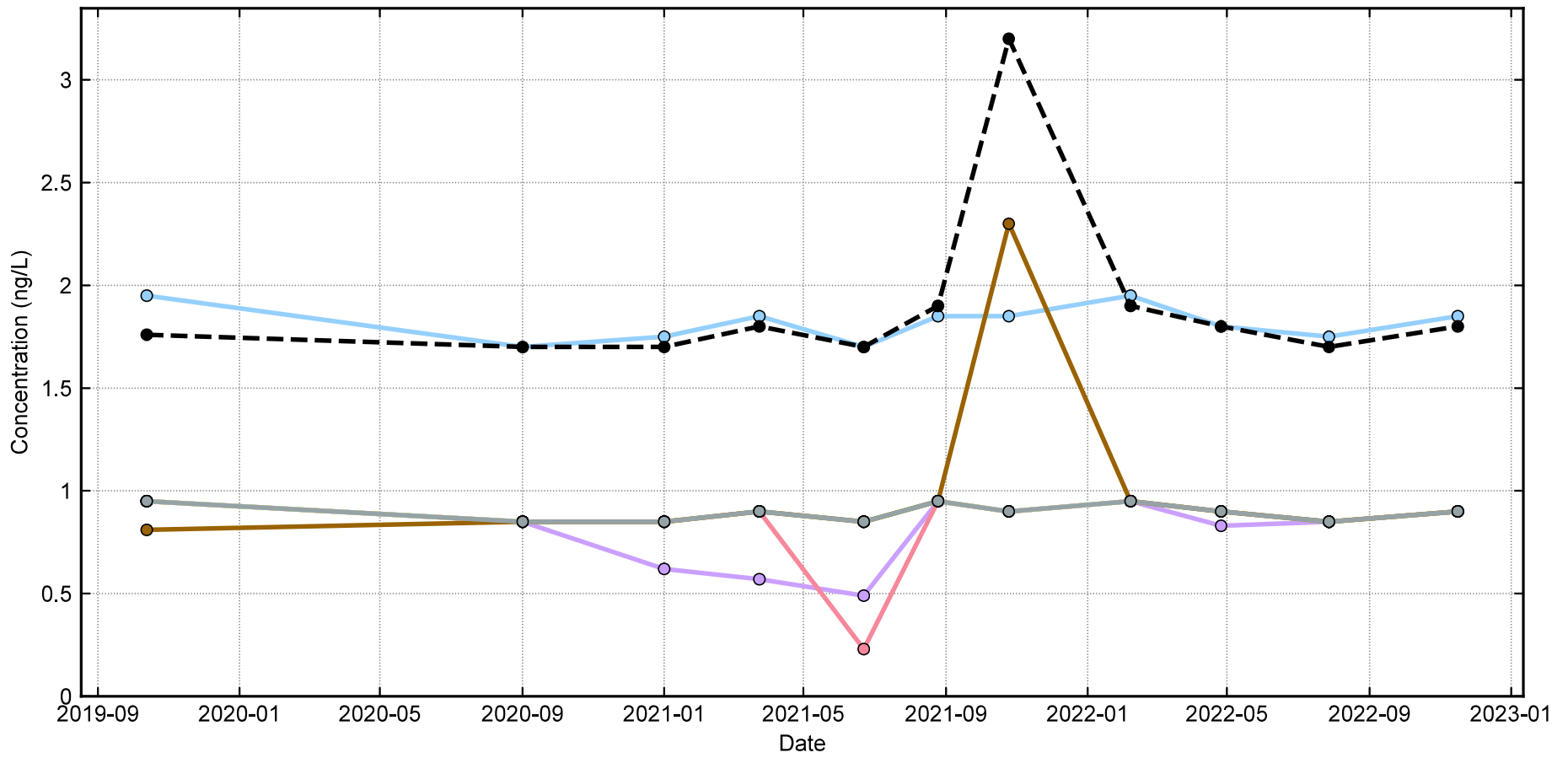
**QUARTERLY LINE GRAPH**

**MW-7-20**

May 2023 102599-023

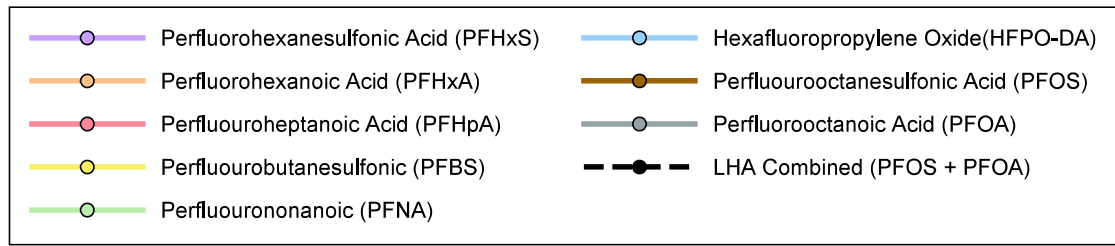
**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants **Figure D.47**

Figure D.50



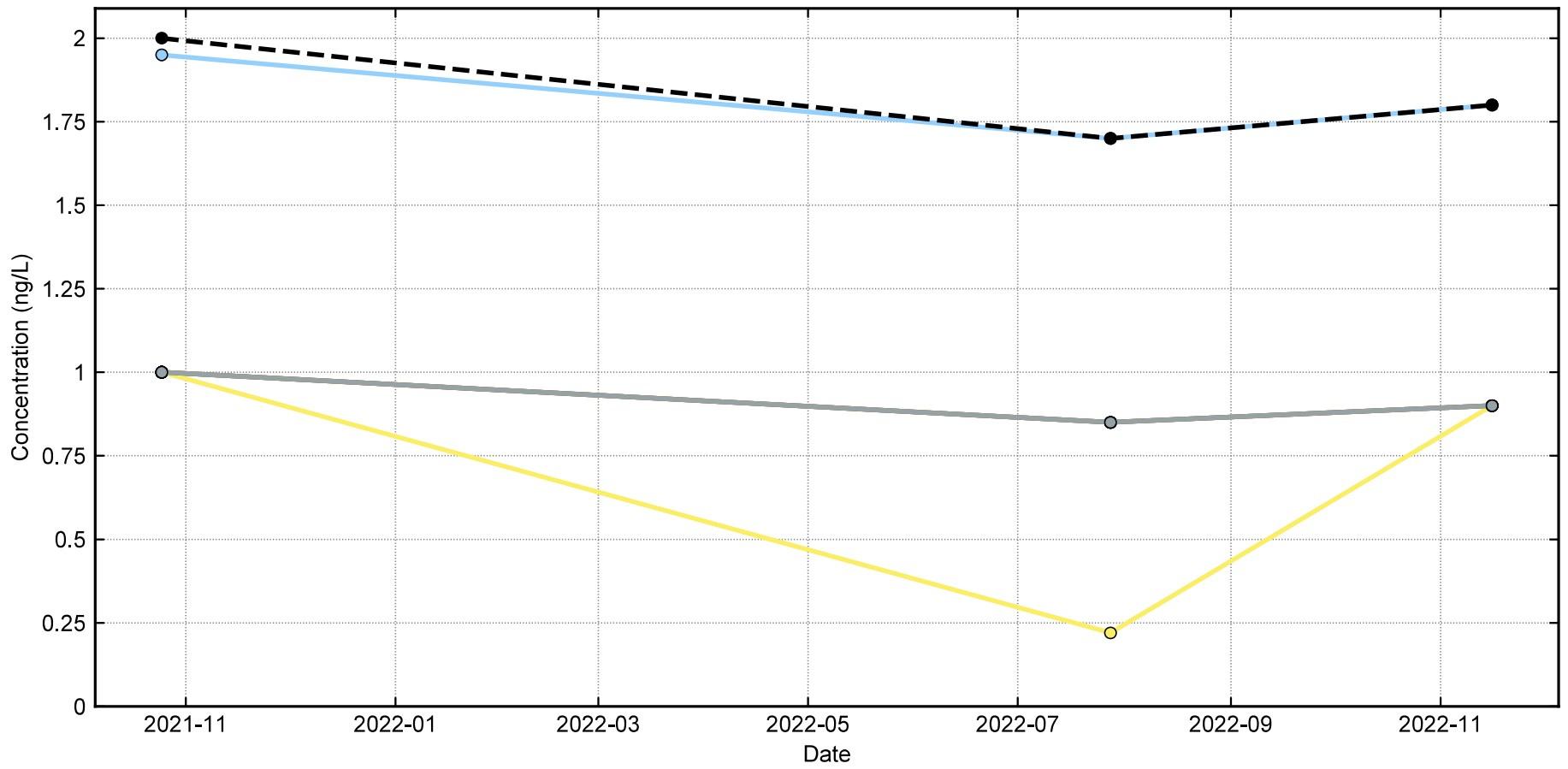
Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



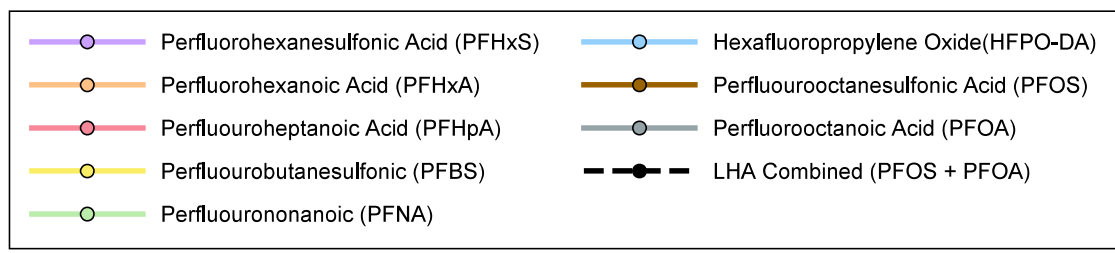
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>MW-8-20</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.48</b>

Figure D.51



Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



Gustavus Airport Quarterly Groundwater Monitoring Summary  
Gustavus, Alaska

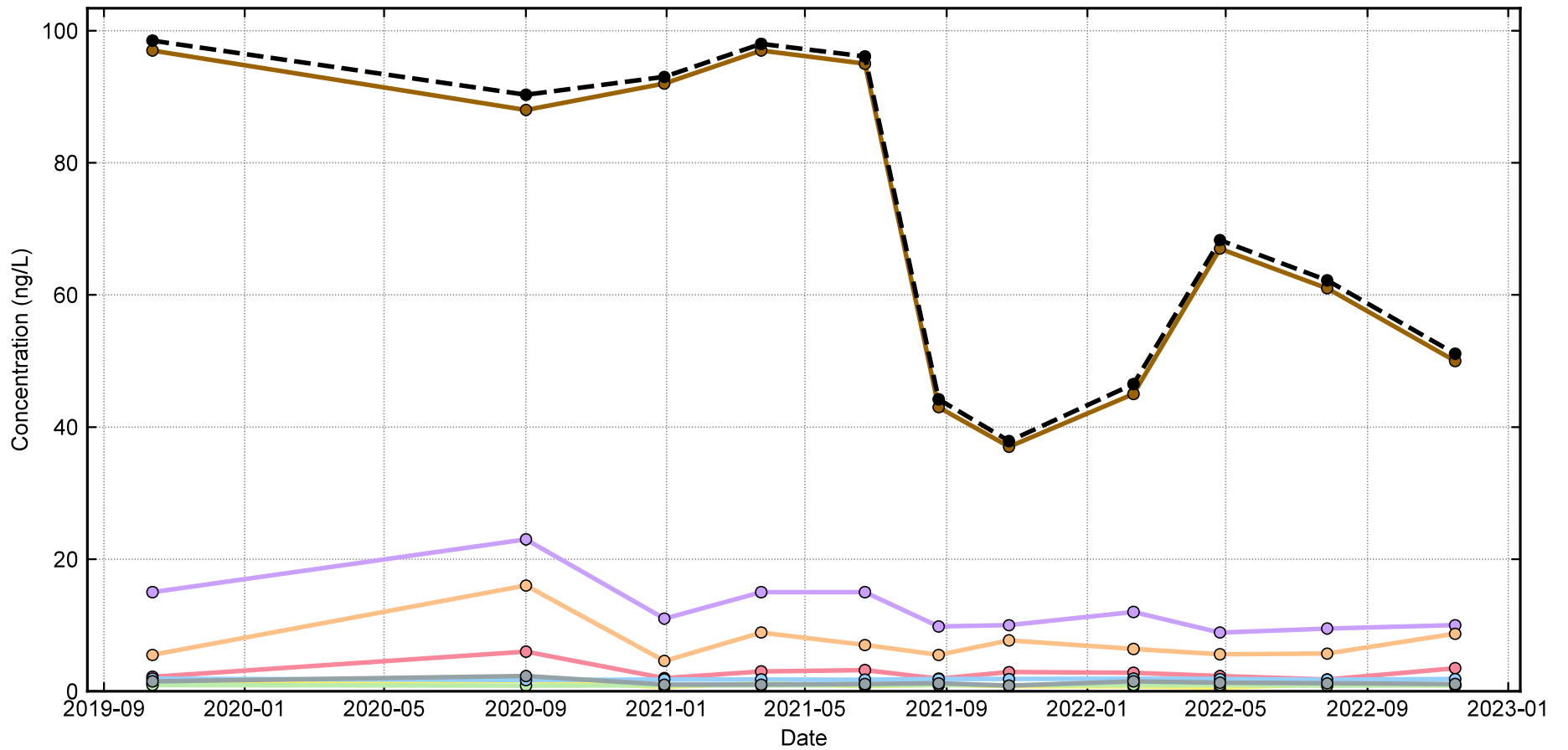
**QUARTERLY LINE GRAPH**

**MW-9-10**

May 2023 102599-023

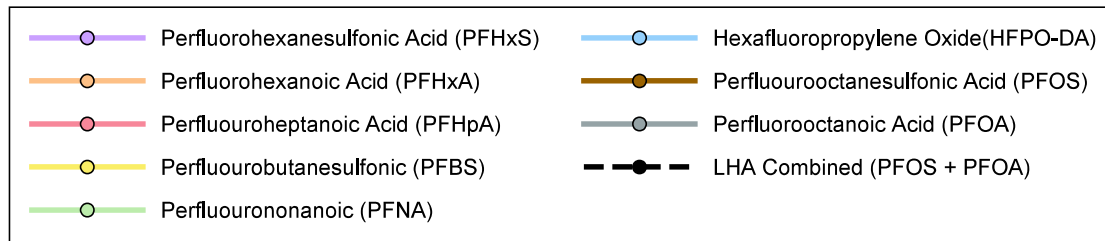
**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants **Figure D.49**

Figure D.52



Notes:

1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
2. Duplicate values were assigned to be the higher of the two results.
3. J-flagged values were assigned to be the estimated value reported.



Gustavus Airport Quarterly Groundwater Monitoring Summary  
Gustavus, Alaska

**QUARTERLY LINE GRAPH**

**MW-9-30**

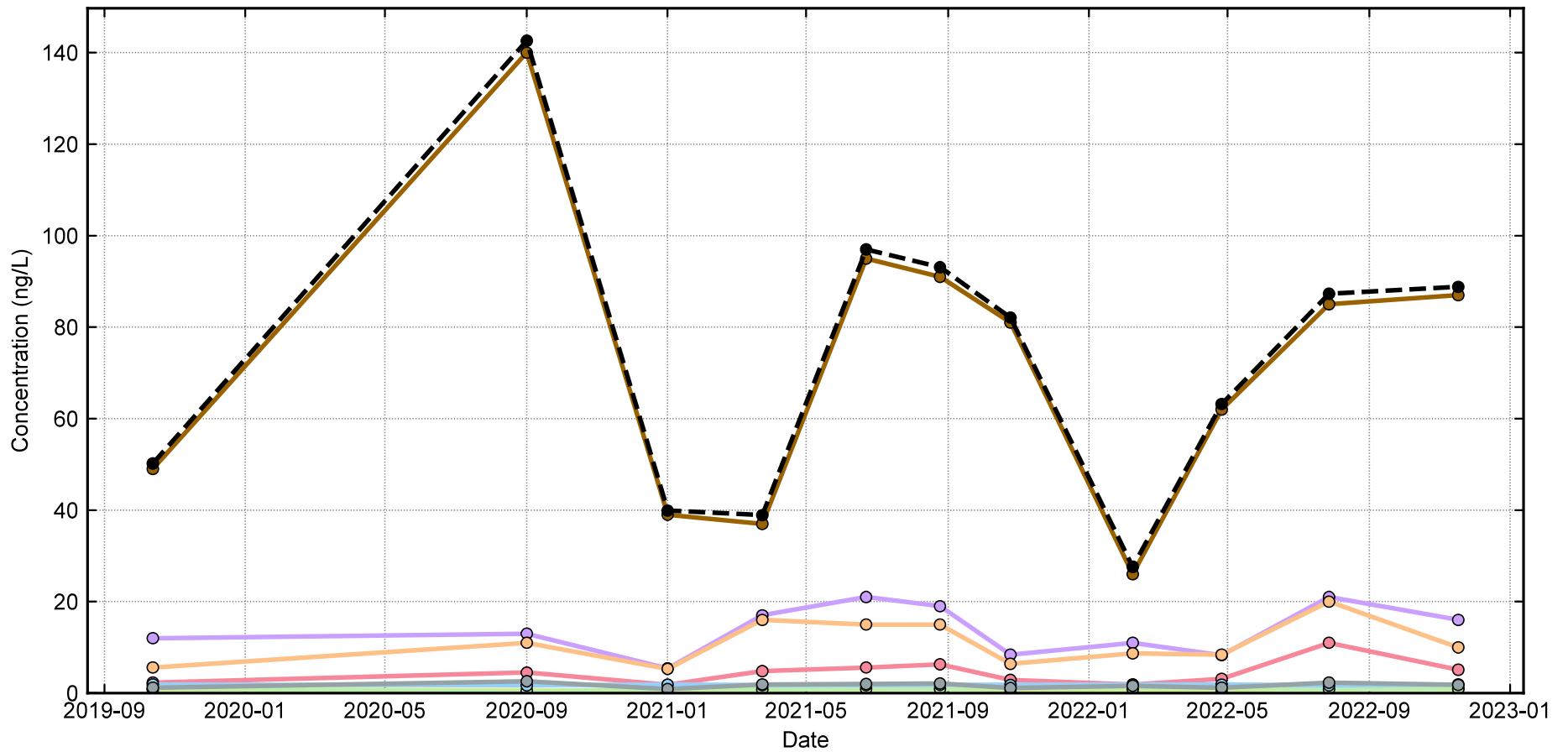
May 2023 102599-023

**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants

**Figure D.50**

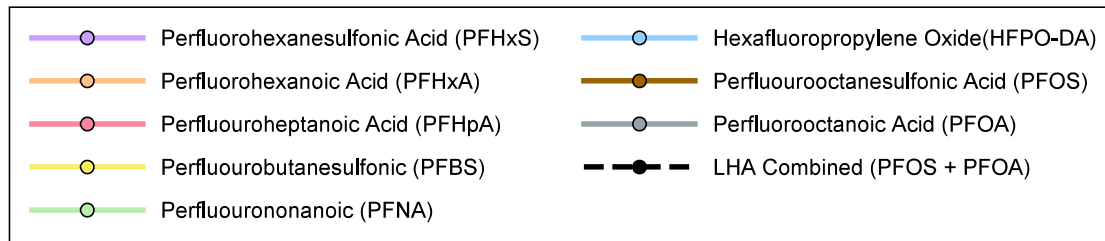
Figure D.53



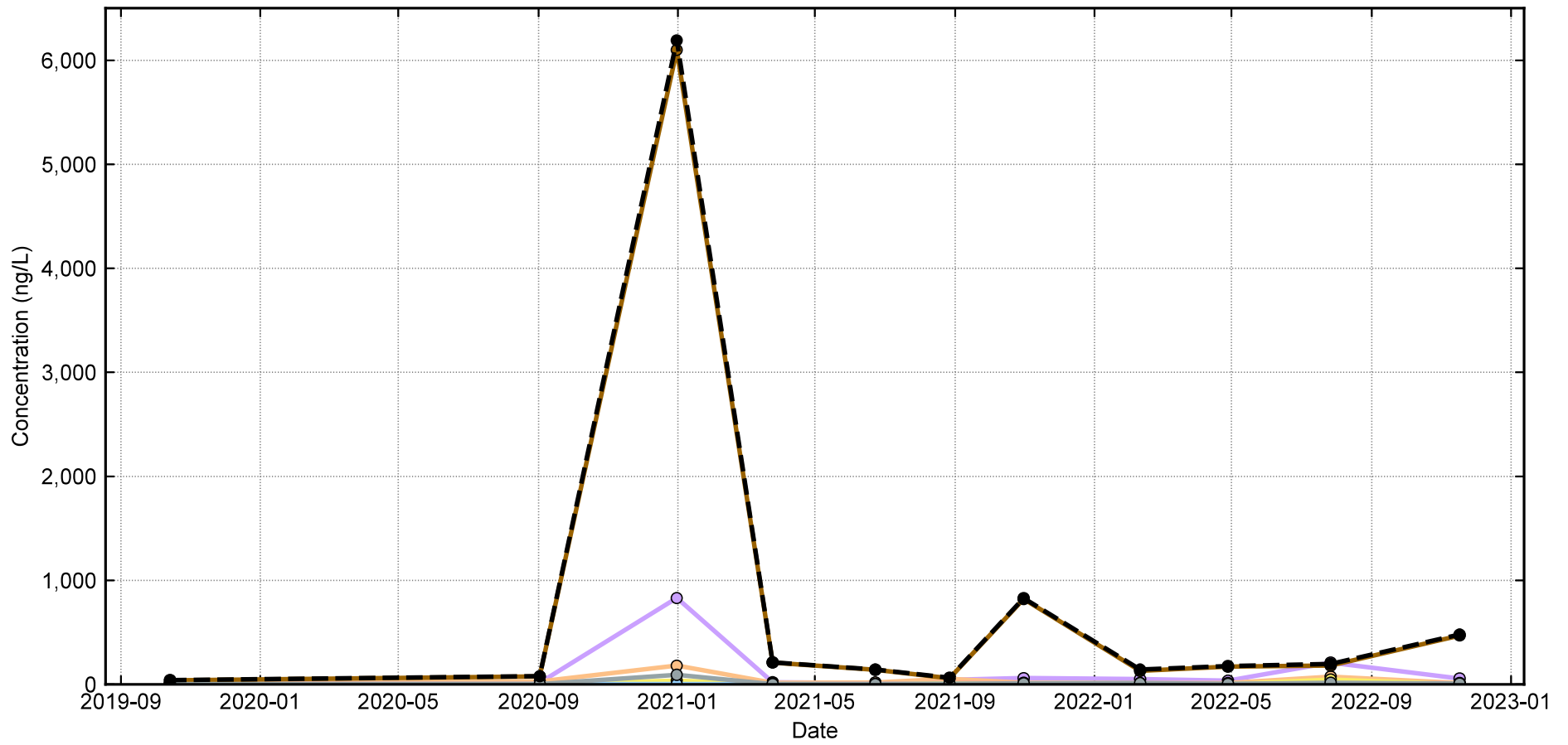


Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.

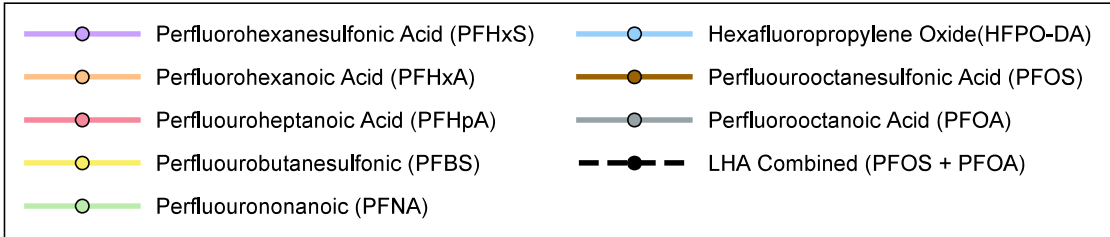


Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>MW-10-20</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.51</b>



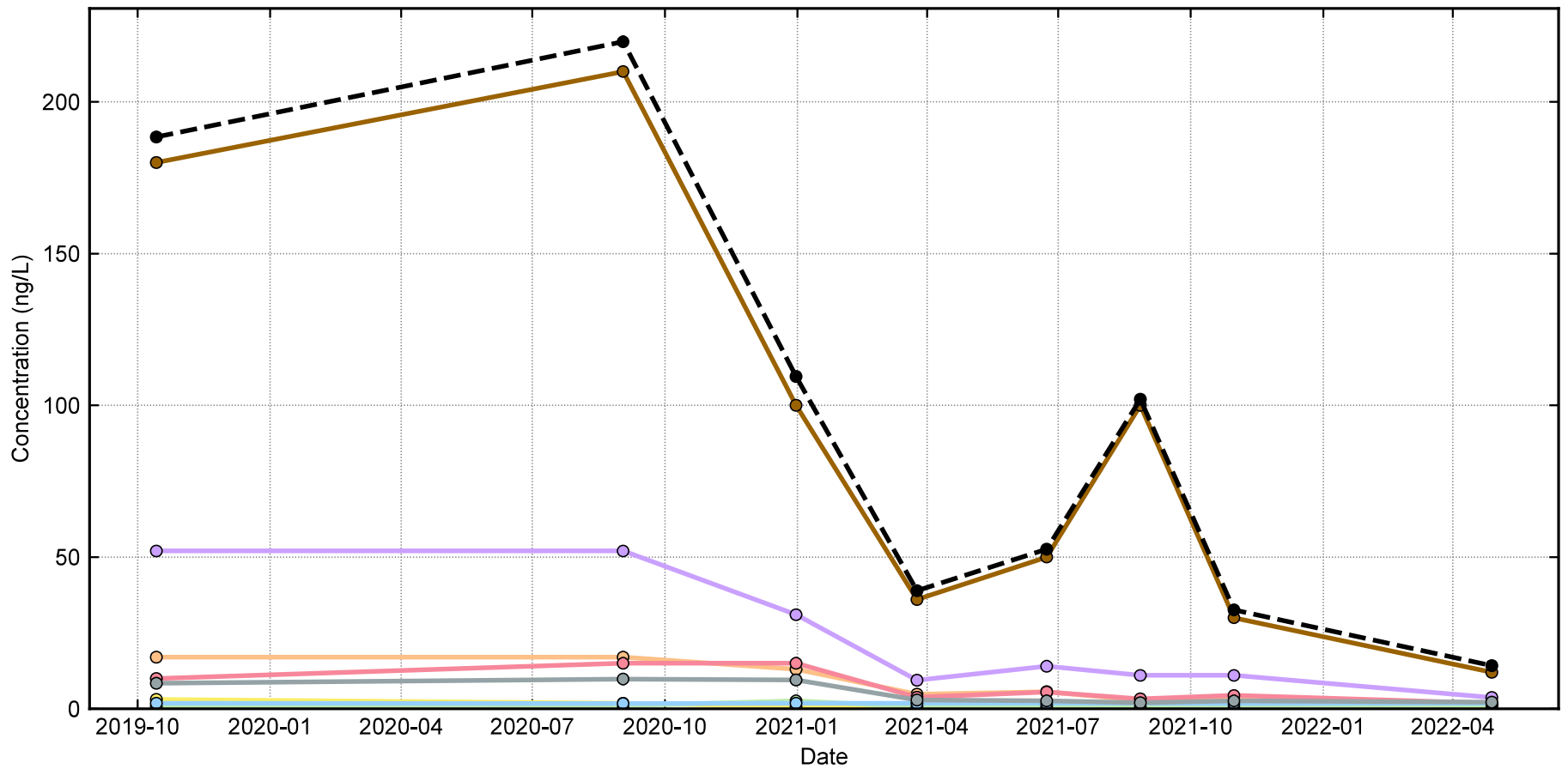
Notes:

- 1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
- 2. Duplicate values were assigned to be the higher of the two results.
- 3. J-flagged values were assigned to be the estimated value reported.



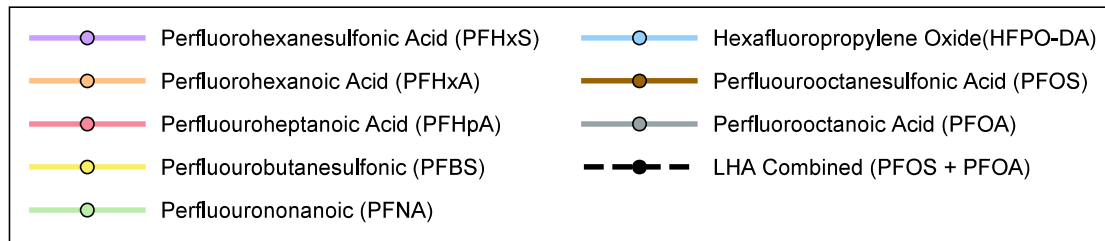
Gustavus Airport Quarterly Groundwater Monitoring Summary Gustavus, Alaska	
<b>QUARTERLY LINE GRAPH</b>	
<b>MW-11-15</b>	
May 2023	102599-023
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure D.52</b>

Figure D.39



Notes:

1. Non-detect values were assigned to be 1/2 the reporting limit (LOQ).
2. Duplicate values were assigned to be the higher of the two results.
3. J-flagged values were assigned to be the estimated value reported.



Gustavus Airport Quarterly Groundwater Monitoring Summary  
Gustavus, Alaska

**QUARTERLY LINE GRAPH**

**MW-12-10**

May 2023 102599-023

**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants

**Figure D.53**

Figure D.41

## Appendix E

# Conceptual Site Model

### CONTENTS

- Scoping Form
- Graphic Form

# Appendix C - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

**Site Name:**

**File Number:**

**Completed by:**

### Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

*General Instructions: Follow the italicized instructions in each section below.*

### 1. General Information:

**Sources** *(check potential sources at the site)*

- |  |  |
|--|--|
| <input type="checkbox"/> USTs                          | <input type="checkbox"/> Vehicles  |
| <input type="checkbox"/> ASTs                          | <input type="checkbox"/> Landfills   |
| <input type="checkbox"/> Dispensers/fuel loading racks | <input type="checkbox"/> Transformers  |
| <input type="checkbox"/> Drums                         | <input checked="" type="checkbox"/> Other: <input type="text" value="Fire-training activities"/> |

**Release Mechanisms** *(check potential release mechanisms at the site)*

- |                                 |  |
|---------------------------------|--|
| <input type="checkbox"/> Spills | <input checked="" type="checkbox"/> Direct discharge |
| <input type="checkbox"/> Leaks  | <input type="checkbox"/> Burning                     |
|                                 | <input type="checkbox"/> Other: <input type="text"/> |

**Impacted Media** *(check potentially-impacted media at the site)*

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Surface soil (0-2 feet bgs*)  | <input checked="" type="checkbox"/> Groundwater      |
| <input checked="" type="checkbox"/> Subsurface soil (>2 feet bgs) | <input checked="" type="checkbox"/> Surface water    |
| <input type="checkbox"/> Air                                      | <input checked="" type="checkbox"/> Biota            |
| <input checked="" type="checkbox"/> Sediment                      | <input type="checkbox"/> Other: <input type="text"/> |

**Receptors** *(check receptors that could be affected by contamination at the site)*

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Residents (adult or child)                      | <input checked="" type="checkbox"/> Site visitor      |
| <input checked="" type="checkbox"/> Commercial or industrial worker                 | <input checked="" type="checkbox"/> Trespasser        |
| <input checked="" type="checkbox"/> Construction worker                             | <input checked="" type="checkbox"/> Recreational user |
| <input checked="" type="checkbox"/> Subsistence harvester (i.e. gathers wild foods) | <input checked="" type="checkbox"/> Farmer            |
| <input checked="" type="checkbox"/> Subsistence consumer (i.e. eats wild foods)     | <input type="checkbox"/> Other: <input type="text"/>  |

\* bgs - below ground surface

**2. Exposure Pathways:** *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.)

*If the box is checked, label this pathway complete:*

Complete

Comments:

PFOS and/or PFOA were identified above soil-cleanup levels at near the ARFF building and the Alaska Air Terminal, and at the southern end of Runway 2-20. All of these locations are within the GST restricted area.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.)

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)?

*If both boxes are checked, label this pathway complete:*

Complete

Comments:

We note PFOS and PFOA are present on the Appendix B guidance document; however, according to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. We therefore consider dermal exposure to these compounds to be insignificant.

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future?

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the groundwater is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350.

*If both boxes are checked, label this pathway complete:*

Complete

Comments:

PFOS and PFOA have been detected at concentrations exceeding the EPA lifetime health advisory level in onsite and offsite residential and commercial drinking water wells. Properties with known exceedances of drinking water standards are being supplied bottled water.

## 2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future?

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities).

*If both boxes are checked, label this pathway complete:*

Complete

Comments:

This pathway is considered complete due surface-water influence on drinking-water wells in the affected area.

## 3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods?

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)?

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.)

*If all of the boxes are checked, label this pathway complete:*

Complete

Comments:

PFOS and PFOA have the potential to bioaccumulate and could be taken up by plants, fish, and birds. Residents fish in the area. Residents may also harvest plants and berries around the airport. Contaminated well water could be used for gardening.

### c) Inhalation-

#### 1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.)

Are the contaminants in soil volatile (see Appendix D in the guidance document)?

*If both boxes are checked, label this pathway complete:*

Incomplete

Comments:

PFAS contaminants are not volatile.

## 2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminated soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures)



Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)?



*If both boxes are checked, label this pathway complete:*

Incomplete

### Comments:

The site characterization activities did not identify petroleum soil contamination at former fire training areas. PFAS contaminants are not volatile. PFAS contaminants are not volatile.



**3. Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

**Dermal Exposure to Contaminants in Groundwater and Surface Water**

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

*Check the box if further evaluation of this pathway is needed:*



Comments:

Some residential water supply wells near airport property have PFOS and PFOA concentrations that exceed the EPA lifetime health advisory level. These wells are used for domestic purposes including bathing. Residents, site visitors, commercial workers, subsistence harvesters, DOT&PF employees, and construction workers could come in contact with PFOS-contaminated surface water.

According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. We therefore consider dermal exposure to these compounds to be "insignificant" for the purposes of this CSM.

**Inhalation of Volatile Compounds in Tap Water**

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

*Check the box if further evaluation of this pathway is needed:*



Comments:

PFAS compounds are not volatile.

## Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM<sub>10</sub>). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

*Check the box if further evaluation of this pathway is needed:*



Comments:

Several surface soil samples near the airport terminals and DOT&PF Maintenance building were above current cleanup levels.

## Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

*Check the box if further evaluation of this pathway is needed:*



Comments:

Sediment analytical samples were not above current cleanup levels.

**4. Other Comments** *(Provide other comments as necessary to support the information provided in this form.)*

# HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: Gustavus Airport Terminal

Completed By: Shannon & Wilson, Inc.

Date Completed: Updated 1/13/2022

**Instructions:** Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.

(1) Media	(2) Transport Mechanisms			
<input checked="" type="checkbox"/> Surface Soil (0-2 ft bgs)	<input checked="" type="checkbox"/> Direct release to surface soil <i>check soil</i> <input checked="" type="checkbox"/> Migration to subsurface <i>check soil</i> <input checked="" type="checkbox"/> Migration to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input checked="" type="checkbox"/> Runoff or erosion <i>check surface water</i> <input checked="" type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____			
	<input checked="" type="checkbox"/> Subsurface Soil (2-15 ft bgs)	<input checked="" type="checkbox"/> Direct release to subsurface soil <i>check soil</i> <input checked="" type="checkbox"/> Migration to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input checked="" type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____		
	<input checked="" type="checkbox"/> Ground-water	<input checked="" type="checkbox"/> Direct release to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input checked="" type="checkbox"/> Flow to surface water body <i>check surface water</i> <input checked="" type="checkbox"/> Flow to sediment <i>check sediment</i> <input checked="" type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____		
		<input checked="" type="checkbox"/> Surface Water	<input checked="" type="checkbox"/> Direct release to surface water <i>check surface water</i> <input type="checkbox"/> Volatilization <i>check air</i> <input checked="" type="checkbox"/> Sedimentation <i>check sediment</i> <input checked="" type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____	
			<input checked="" type="checkbox"/> Sediment	<input checked="" type="checkbox"/> Direct release to sediment <i>check sediment</i> <input checked="" type="checkbox"/> Resuspension, runoff, or erosion <i>check surface water</i> <input checked="" type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____

(3) Exposure Media	(4) Exposure Pathway/Route	(5) Current & Future Receptors						
		Residents (adults or children)	Commercial or Industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
<input checked="" type="checkbox"/> soil	<input checked="" type="checkbox"/> Incidental Soil Ingestion <input checked="" type="checkbox"/> Dermal Absorption of Contaminants from Soil <input checked="" type="checkbox"/> Inhalation of Fugitive Dust	C/F	C/F	C/F	C/F	C/F	C/F	
	<input checked="" type="checkbox"/> groundwater	<input checked="" type="checkbox"/> Ingestion of Groundwater <input checked="" type="checkbox"/> Dermal Absorption of Contaminants in Groundwater <input type="checkbox"/> Inhalation of Volatile Compounds in Tap Water	C/F	C/F	C/F	C/F	C/F	
		<input type="checkbox"/> air	<input type="checkbox"/> Inhalation of Outdoor Air <input type="checkbox"/> Inhalation of Indoor Air <input type="checkbox"/> Inhalation of Fugitive Dust					
<input checked="" type="checkbox"/> surface water	<input checked="" type="checkbox"/> Ingestion of Surface Water <input checked="" type="checkbox"/> Dermal Absorption of Contaminants in Surface Water <input type="checkbox"/> Inhalation of Volatile Compounds in Tap Water		C/F	C/F	C/F	C/F	C/F	
	<input checked="" type="checkbox"/> sediment		<input checked="" type="checkbox"/> Direct Contact with Sediment	C/F	C/F	C/F	C/F	C/F
<input checked="" type="checkbox"/> biota	<input checked="" type="checkbox"/> Ingestion of Wild or Farmed Foods	C/F	C/F	C/F	C/F	C/F	C/F	

# Important Information

About Your Geotechnical/Environmental Report

IMPORTANT INFORMATION

## CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

## THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors that were considered in the development of the report have changed.

## SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

## MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent

such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

#### A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

#### THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

#### BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

## READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

**The preceding paragraphs are based on information provided by the ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland**